Constraining factors in water resources management and planning in the Plain of Reeds, Vietnam

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Abstract

The research explores current water uses in the Plain of Reeds (*Dong Thap Muoi*) sub-region in Vietnam and identifies key constraints facing water resources management and planning. With increasing upstream demands on water resources, and shifting weather and rainfall patterns linked to climate change, there is an urgent need for effective water governance. Integrative approaches my help to achieve coordination and cooperation among the various authorities and territories engaged in water management in the sub-region. Commitment at the national level to principles of Integrated Water Resource Management (IWRM), is evident in several key legal and policy documents in Vietnam, but it is unclear how far such principles have been translated to and implemented at the local levels.

A multi-level governance perspective was applied to identify the connections, gaps and evolving interdependencies across policy areas and between agencies and levels of government engaged in water resource management in the Plain of Reeds. Field research involved focus group discussions with local communities, and key informant interviews with representatives from government agencies, NGOs, and research institutes at three administrative levels (commune, district and provincial). Together with the results of an analysis of key government policies, the findings show how water resource management and planning are constrained by a variety of factors. These factors are (1) a lack of transboundary collaboration among state actors across the study areas; (2) inadequate organizational capacity within responsible agencies; (3) a lack of water resources awareness in local communities and among officials; (4) the absence of inter-agency information sharing mechanisms; and (5) intensive investment and expansion in the agriculture sector. The study produces recommendations for policymakers and other relevant actors to promote greater inter-provincial collaboration and cross-border cooperation in water management in the area.

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This thesis is dedicated to my beloved father, Nguyen Thanh Tong (1960-2018) who was not be able to see my academic completion. I am very proud to be your son and I hope you can see my achievement from heaven. Love you more than anything and miss you more than you even know.

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List of Abbreviations

ADB	Asian Development Bank
CPV	Communist Party of Vietnam
EIA	Environmental Impact Assessment
FGD	Focus Group Discussion
GO	Government Office
HCMC	Ho Chi Minh City
IUCN	International Union for Conservation and Development
IWRM	Integrated Water Resource Management
LEP	Law on Environmental Protection
LWR	Law on Water Resource
MARD	Ministry of Agriculture and Rural Development
MDI	Mekong Delta Development Research Institute
MLG	Multi-level Governance
MONRE	Ministry of Natural Resources and Environment
NGO	Non-Government Organization
POR	Plain of Reeds
PPC	Provincial People's Committee
RBO	River Basin Organization
VMD	Vietnamese Mekong Delta
WRM	Water Resource Management

1. Introduction

Freshwater resources have enriched and fostered the development of the Vietnamese Mekong Delta (VMD), which has become the largest agricultural production region in Vietnam, contributing approximately 90 per cent of the country's total rice exports. However, changes in hydrological flows due to climate change, sea level rise, and dramatic land-use change have resulted in many environmental problems, including water issues. The Delta ranks in the top five deltas in the world likely to be severely affected by the adverse impacts of climate change, having recorded a rise in sea level at the coast of 20 centimeters since 1901 (Mekong Delta Plain, 2013). This has significant implications for the people of the Delta, because of its low elevation, exposure to flooding, and critical reliance on freshwater resources. Located at the end of a major international river that is shared by six countries, the delta has become more vulnerable as a result of the uncertainty of river flows, which are diverted for, and impacted by, the development activities of upstream countries. Effective water resource management (WRM) in the Delta, and the wider Mekong Basin, has therefore been a significant concern. It requires an integrated and cooperative approach to ensure the sustainability of the delta, considering the interactions among natural resources and stakeholders in managing water and related resources. However, strong hierarchical political structures, and sectorally fragmented policy and planning, have resulted in ineffective resource management. This study, therefore, explores key policies and governance instruments, structural factors, and important actors in water governance in Vietnam in order to identify factors constraining more integrated and cooperative water management and planning.

1.1 Background

Water is the most valuable resource that nature provides humankind and all living things. This valuable resource has been declining all over the world due to rapid urbanization, industrialization and climate change (Arora & Boer, 2001; Bhatt & Khanal, 2012; Chinh et al., 2014; Kettner et al., 2009; Lebel et al., 2014, p. 203; Lu & Siew, 2006; Manh et al., 2014; Vliet et al., 2013). However, global water problems lie not solely in water scarcity, but also in poor governance and management of water (Global Water Partnership, 2000), which often cause conflicts between users (Nhan et al., 2007). Researchers and policymakers have therefore increasingly sought to identify the shortcomings of existing and past water governance arrangements, and looked for policy and management options that will address these (Ingold et al., 2018). Perhaps the most influential and widely adopted set of principles in this area internationally has been encapsulated in the idea of Integrated Water Resource Management (IWRM). IWRM emerged out of international discussions and fora over several decades, but came to prominence from the early 1990s as a package of principles for sustainable and integrated water resources management (Margerum, 2001; Rahaman & Varis, 2005). IWRM has come to inform water resource management and planning in most countries, including Vietnam (Waibel, 2010; Molle & Hoanh, 2011), and has been promoted by multilateral institutions and organizations such as the Global Water Partnership, the World Bank, and UNEP (Bandaragoda & Babel, 2010). While IWRM appears to incorporate a number of common-sense principles and recommendations for water management, its operationalization on the ground has faced many obstacles and implementation has been patchy, which has also meant that the concept has drawn criticism (Giordano & Shah, 2014; Hering & Ingold, 2012).

The integration of policy and management functions with a bearing on water resources has proven particularly challenging given complex multi-level governance structures. On one hand, multi-level systems are seen as potentially effective because of the dispersion of authority and responsibility for resource management to lower levels and more localized units of government, and even to non-state actors (Hooghe & Marks, 2003; Newig & Fritsch, 2009; Naustdalslid, 2015). Multi-level governance allows for local heterogeneity, preferences, and jurisdictional competition (Gupta & Pahl-Wostl, 2013), and an openness to experimentation with governance approaches and active participation of stakeholders (Naustdalslid, 2015). On the other hand, multi-level governance structures have been argued to pose some challenges to integrated water management in practice (Hjorth & Dan, 1994; MacKenzie, 1997; Molle & Hoanh, 2011; Pahl-Wostl, 2009). In cross-border rivers, these issues become even more

significant because administrative jurisdictions do not 'fit' the river basin scale (Moss & Newig, 2010). However, currently the broad consensus among scholars and policymakers is that the most appropriate approach to water management is a holistic integrated ecosystem or river basin management approach (Allan & Rieu-Clarke, 2010; Jaspers, 2003), with capacity for adaptive management and the involvement of a wide range of stakeholders (GWP, 2000). Such an approach therefore aims to coordinate across sectors, government and administrative levels (Armitage, 2008; Margerum, 2001; Pahl-Wostl et al., 2008).

However, multi-level governance structures that are characterized by a strong hierarchical planning approach, such as that of Vietnam, pose important challenges for integrated management of water resources. In Vietnam, which has expressed a commitment to the principles of IWRM in national-level policy, implementation of an integrated approach has been problematic (Waibel et al., 2012), and the country faces considerable water management issues (Sajor & Minh Thu, 2009). Although many studies have examined water resource management issues in Vietnam (Miller et al., 1999; Nhan et al., 2007; Tuan et al., 2007), scholars have yet to investigate the particular challenges in water resource management (WRM) and planning in the context of cross-border management within the complex and hierarchical multi-level governance structure of Vietnam. This study therefore explores key policies and governance instruments, structural factors, and important actors in water governance in Vietnam in order to identify constraining factors on integrated water management and planning in the context of the case study area of the Plain of Reeds (POR) – a cross-border sub-region located in the Vietnamese Mekong Delta. It applies a multi-level governance lens to examine both vertical and horizontal dimensions of integration and coordination among actors and administrative units related to water management. This enables the identification of barriers to and constraints on an integrative approach in water resources management and planning in the POR. The vertical dimension considers how policy and authority flow from higher to lower administrative levels. The horizontal dimension refers to the involvement and cooperation of different government agencies and actors at the same administrative level, and collaboration arrangements among provinces in a cross-border region.

This chapter proceeds with a brief introduction to Vietnam and the study area (Section 1.2), with a focus on the multi-level governance structure in Vietnam, and the position of the POR as a cross-border sub-region or management unit within this. This is followed by a discussion of the rationale and motivation for this study (Section 1.3). Section 1.3 also presents the aim

and objectives of the study, as well as the specific research questions posed. The chapter concludes by laying out the scope and outline of the remainder of the thesis in Section 1.4.

1.2 Introduction to the Plain of Reeds, Vietnam

1.2.1 Vietnam

The Socialist Republic of Vietnam is located in Southeast Asia, on the eastern side of the Indochina Peninsula (Figure 1.1). Along its unique S-shaped boundary Vietnam shares borders in the north with China, and in the west with Laos and Cambodia. To the east lies approximately 3,200 kilometers of coastline. According to Vietnam's 2016 census, the population of approximately 93 million is 65% rural and 35% urban, with the two largest cities of Ho Chi Minh City and Hanoi (the capital) accounting for 8.3 and 7.3 million inhabitants respectively.

The physical geography of Vietnam comprises two major kinds of terrain, high mountainous and flat low-lying delta. Mountainous areas account for about three-quarters of Vietnam's territory, while two major river deltas account for the bulk of the rest – the Red River Delta in the north, and the Mekong River Delta in the south. Both of these major rivers are international water bodies, and the state of water resources in both deltas is therefore influenced by land and water use beyond Vietnam's borders.

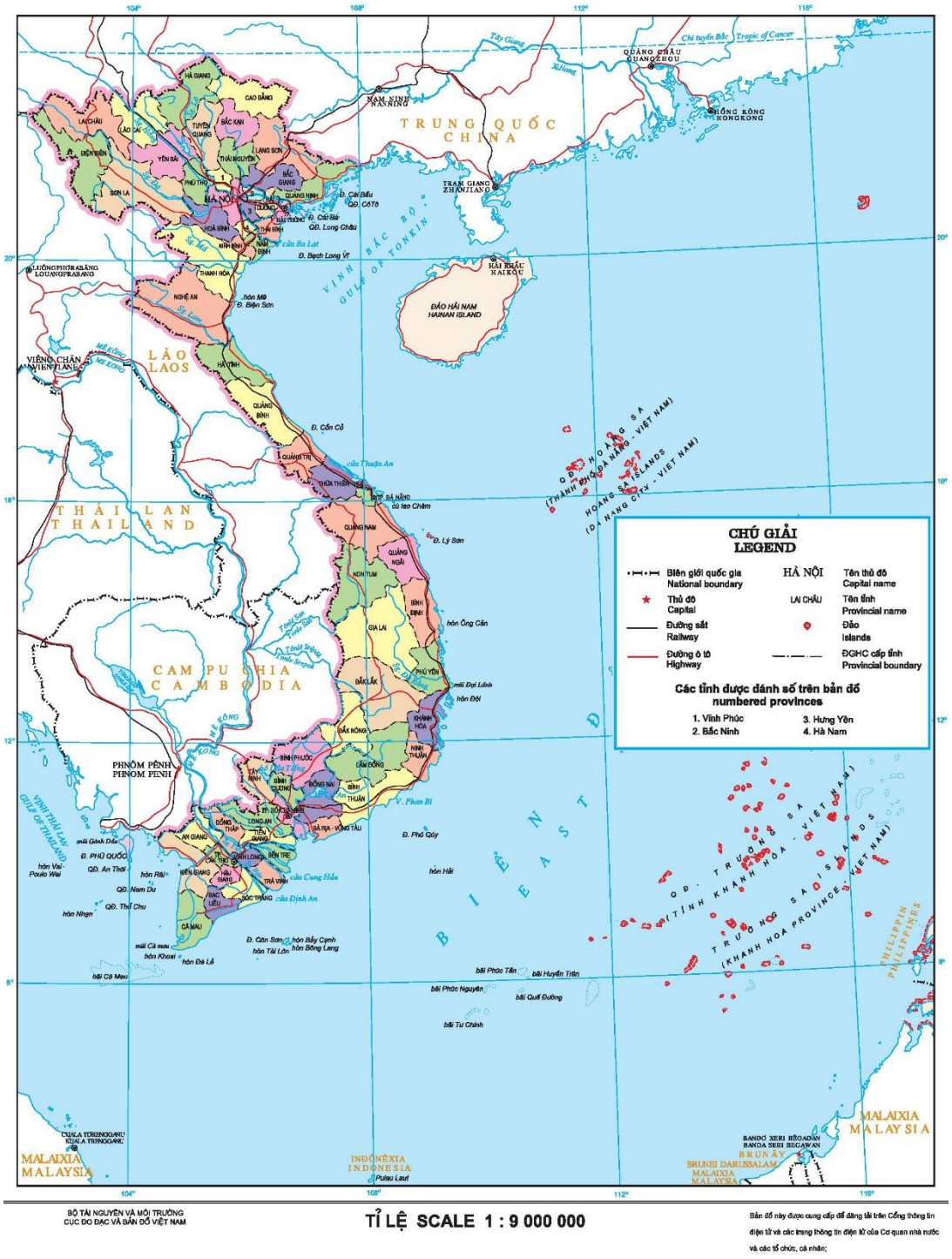

Figure 1.1: Administrative map of Vietnam
Source: (MONRE, 2012)

According to the Ministry of Natural Resource and Environment (MONRE), Vietnam has abundant water resources. The country has about 108 river basins with 3,450 rivers and streams. The average annual surface water volume of Vietnam is about 830 billion cubic meters, mainly concentrated in nine large river basins. However, about 63% of surface water

(equivalent to 520 billion cubic meters) is generated outside the country's borders and only about 310 billion cubic meters is generated within the country (MONRE, 2012). In addition, water resources are managed under a relatively fragmented structure, in which administrative authority is divided across 63 provinces, 713 districts, and 11,162 communes. This potentially poses great challenges for the implementation of national policy and the coordination of water management.

Water resources in Vietnam are exploited for a wide range of purposes, including domestic, industrial, hydropower, transport, recreational, cultural, agricultural, and religious purposes. Among these, the major user is the agriculture sector, which is especially important in rural livelihoods in Vietnam, and is central to the national social-economic development strategies of the central government (Nhan et al., 2007; Tuan et al., 2007). Agricultural water use is of particular importance in the Vietnamese Mekong Delta (Nhan et al., 2007). The Vietnamese government has been confronting major challenges in managing the country's water resources due to related issues of water shortages, pollution, floods and saline intrusion (CGIAR, 2016; Miller, 2014; Miller et al., 1999; Sajor & Minh Thu, 2009; Tuan et al., 2007).

1.2.2 Case study location: The Plain of Reeds

The Plain of Reeds (POR), or *Dong Thap Muoi* in Vietnamese, (Figure 1.2) is a highly agriculturally productive sub-region in the Vietnamese Mekong Delta (VMD). This sub-region is widely recognized as a unique hydrological region of the delta (Tanaka, 2001; Vinh & Wyatt, 2006) and is described as a closed and broad natural floodplain of the area. The POR was originally a vast wetland depression area and eco-region in the northeast of the VMD, encompassing three administrative provinces including Dong Thap, Long An, and Tien Giang (Van Ni et al., 2006). Under recent national policy and development strategies, these provinces are required to coordinate and produce a development plan for the sub-region. This research investigates the case of the POR as a cross-border management unit embedded in the complex multi-level governance system of Vietnam, in order to explore the implications and main challenges for water governance in the sub-region.

The two POR provinces of Dong Thap and Long An were selected as the sites for field research, as they comprise the majority of the sub-region (see Figure 1.2), and their cooperation will be essential to any integrated approach to the management of water resources in the POR.

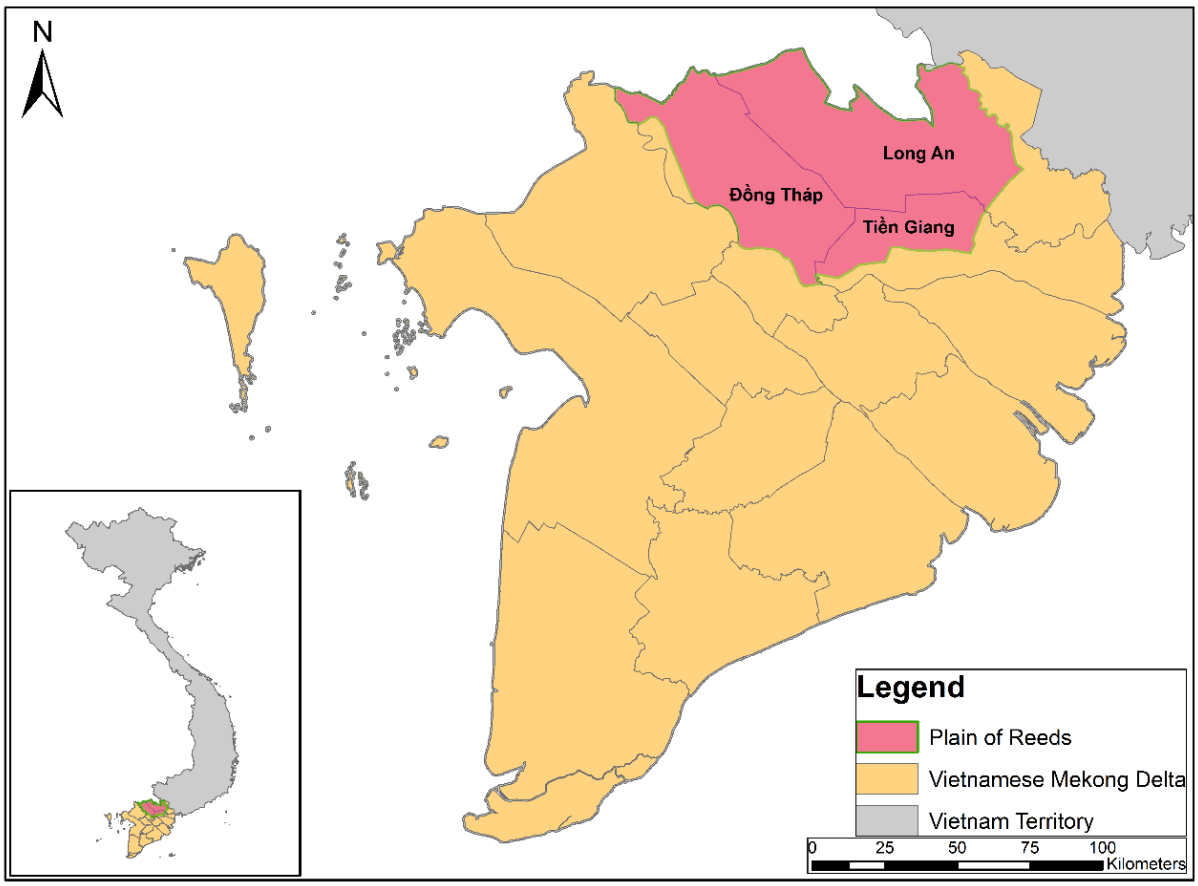

Figure 1.2: Location of the Plain of Reeds in the Vietnamese Mekong Delta
Source: Author (2018)

1.3 Research motivation, aim and objectives

The research is motivated out of a recognition of the challenges that Vietnam faces in the effective and sustainable management of water in the country, and particularly in the VMD. In the POR, water is essential to the livelihoods of many people, but current management of the resource is not likely to secure sustainable access to water, or the health of ecosystems and the environment into the future. This is due to increasing pressures on the resource, but also apparent limitations in the ability of the relevant authorities to manage water resources in an integrated way. Moreover, effective and sustainable water management in the POR can benefit the delta region because it is one of the two largest depression areas in upper delta. It is hoped that the findings from this study will benefit the Vietnamese water management agencies, NGOs and local communities specific to the POR sub-region. It should enhance the effectiveness of management and planning for water resources in the future.

The overall goal of this research is, therefore, to explore key constraints on integrated water resource management in the POR. An understanding of the challenges and constraints will then support recommendations for more effective WRM in the POR. To accomplish this, specific objectives were pursued. The four objectives, which guided the research, were to:

- Describe the main WRM policies in Vietnam and how they are implemented;
- Identify key actors and their roles in water management and planning;
- Characterize key challenges in the implementation of IWRM in the POR; and
- Identify potential solutions to the identified challenges that could improve water management in Vietnam.

In order to meet the above objectives, the following focused research questions were developed:

Question 1: What are the key policies, strategies, and plans guiding water resources management in the POR and how have they been implemented in practice?

Question 2: Which are the key actors in water management and planning in Vietnam and how do they influence water planning and decision-making in the POR?

Question 3: What are the key factors that constrain IWRM in the POR?

Question 4: How can the identified challenges be tackled to help achieve IWRM?

1.4 Design and scope of the study

The study focuses on the issue of WRM and planning, in particular in the POR. To address the research questions, qualitative research methods were used in order to gain a deeper understanding of water management processes and challenges. Specifically, focus group discussions with local communities, and semi-structured interviews with key informants, were used to investigate people's perspectives on the key policies and main water management challenges. Their roles, and the interactions among them, were also explored to better understand their collaboration in addressing water issues. These methods are discussed in detail in Chapter 3 of the thesis.

Due to the multi-level institutional arrangements of Vietnam and the geographical location of the POR, two cases were selected to study. They include (1) Phu Thanh B Commune, Tam

Nong District, Dong Thap Province; and (2) Binh Hoa Trung Commune, Moc Hoa District, Long An Province. The research thereby adopted a nested multi-level design, to explore the multi-level governance dynamics relevant to understanding WRM processes and challenges in the POR. The study was also focused in particular on factors constraining implementation of the principles of IWRM in the POR.

The thesis is structured as follows: A review of the literature in Chapter 2 outlines the principles of IWRM and challenges that have been associated with their implementation, as well as the role and importance of inter-sectoral coordination in management and planning. The chapter also reviews the literature on multi-level governance, and considers how the perspective has been applied, and how it might be applied in the context of the governance structure of Vietnam. Chapter 3 then explains the methodology of the study in detail and describes the research and data analysis methods. The results of this study are presented and discussed in Chapters 4, 5, and 6. Chapter 4 presents findings on the key legislative documents and policies underpinning WRM in Vietnam and the POR. It also describes how these policies are implemented on the ground. Following this, Chapter 5 identifies the key players involved in WRM, and describes their roles. Chapter 6 outlines the main challenges faced in the implementation of WRM and planning in the POR. Chapter 7 then discusses the overarching findings of this study (from Chapters 4 to 6) in relation to the research of other scholars as portrayed in Chapter 2. Finally, Chapter 8 closes the thesis with a presentation of the conclusions and recommendations for further research.

2. Literature Review

Water is a vital resource globally, and is used across multiple economic sectors. Water resources, and the natural systems that underpin them often span administrative and jurisdictional boundaries, from national borders to sub-national regional and provincial boundaries. Therefore, water resource management (WRM) typically concerns a wide range of authorities and stakeholders across neighboring territories and jurisdictions and different sectors. As a result, the management of water resources has tended to be relatively fragmented. This is increasingly identified as a problem for effective management, and calls for more integrated approaches have proliferated. The most prominent set of principles for integrated management is captured in the concept of integrated water resource management (IWRM), as promoted by the Global Water Partnership (GWP). The GWP states:

> "Integrated Water Resource Management helps to protect the world's environment, foster economic growth and sustainable agricultural development, promote democratic participation in governance, and improve human health. Worldwide, water policy and management are beginning to reflect the fundamentally interconnected nature of hydrological resources, and IWRM is emerging as an accepted alternative to the sector-by-sector, top-down management style that has dominated in the past" (GWP, 2011).

This thesis explores provisions for IWRM in Vietnam and identifies challenges and constraints on its implementation at the local level. In order to do this, it draws on two main literatures, examining work on IWRM, and scholarship on multi-level environmental governance. This chapter provides a review of these literatures, and also takes stock of research that has applied these concepts to the case of Vietnam.

This chapter proceeds as follows: Section 2.1 addresses the literature on integration in water management, with particular attention to IWRM, and explores the notion of water management as a cross border issue. Section 2.2 outlines the needs of IWRM at different scales in the Mekong Basin. Section 2.3 then reviews the literature on multi-level governance as it applies to environmental governance and water governance in particular. This draws on work in political science and governance, and considers multi-level governance in terms of 'vertical' and 'horizontal' levels and integration. Finally, Section 2.4 outlines the multi-level organizational structure related to water management in Vietnam.

2.1 Integration in water management

2.1.1 The emergence of integrated water resource management

Water resources are facing degradation globally due to anthropogenic pressures. Especially since World War II, water resources have been intensively exploited to serve economic growth and development. In addition to increased water use over this period, problems of water degradation have been rising due to the impacts of climate change and sea-level rise, urbanization, agricultural expansion, industrial expansion, and hydropower development (Arora & Boer, 2001; Lu & Siew, 2006; Kettner et al., 2009; Bhatt & Khanal, 2012; Vliet et al., 2013; Chinh et al., 2014; Lebel et al., 2014; Manh et al., 2014). The significant role of water in sustainable development, therefore, has long been recognized through major world summits, such as the United Nations Conferences on Sustainable Development.

The World Water Council reported in 2000 that poor governance and management underlie most of the world's water problems, stating that "There is a water crisis today. But the crisis is not about having too little water to satisfy our needs. It is a crisis of managing water so badly that billions of people - and the environment - suffer badly" (Cosgrove & Rijsberman, 2014, p. 20). The broad goal of water management is to achieve a balance between socio-economic development and environmental protection. However, because management has developed in a fragmented way, it tends to be competitive rather than cooperative (Groenfeldt & Schmidt, 2013), as different sectors strive to secure water – for example, for navigation, agriculture, domestic use, industry, environmental flows etc. This adversarial approach is increasingly recognized as inadequate in today's interconnected world. Many policymakers, managers, academic researchers, and 5,700 other participants across 130 countries and territories, who participated in the 2nd World Water Forum in The Hague in 2000, achieved a broad consensus to this effect (Rijsberman, 2000).

This view on water management provided a strong rationale for an Integrated Water Resource Management (IWRM) approach. The development of IWRM as an approach to water management was guided by the four 'Dublin Principles' that emerged from the 1992 International Conference on Water and the Environment in Dublin, Ireland. The four Dublin principles are: (1) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; (2) Water development and management should be based on a participatory approach, involving users, planners and policymakers at all levels; (3) Women play a central part in the provision, management and safeguarding of water; and (4)

Water has an economic value in all its competing uses and should be recognized as an economic good. IWRM was first introduced by the GWP, which defined it as "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (GWP, 2000, p. 22). IWRM was intended to create a fundamental turning point in global water management away from adversarial and fragmented governance and towards cooperative and integrated approaches, and has therefore been widely endorsed and embraced (Margerum, 2001; Rahaman & Varis, 2005).

Among the underpinning principles, participation of and collaboration among stakeholders has frequently been identified as an important factor, which is expected to significantly improve the effectiveness of water management and governance because of the diverse, dynamic, and complex interaction of interests and actors involved in the water sector (Margerum, 2001; Armitage, 2008; Newig & Fritsch, 2009; Yang et al., 2016). For instance, on the basis of a meta-analysis of 47 international case studies of participatory environmental governance, Newig and Fritsch (2009) found that high levels of collaboration and communication among stakeholders yielded better environmental outcomes. Scholars have also argued that while a single actor (e.g. a government agency) may struggle to effectively address an environmental issue by themselves, different stakeholders with diverse perspectives and abilities to solve a problem can constructively contribute their skills and knowledge to solve an issue together (Margerum, 2001; Armitage, 2008). Thus, the participation of individuals and organizations is a noteworthy aspect of IWRM.

The Ministerial Declaration from the 2nd World Water Forum identified and emphasized IWRM as an approach that urgently requires the collaboration of stakeholders at multiple levels and sectors. It stated that "IWRM depends on collaboration and partnerships at all levels, from individual citizens to international organizations […]. To achieve IWRM, there is a need for coherent national and, where appropriate, regional and international policies to overcome fragmentation, and for transparent and accountable institutions at all levels" (World Water Forum, 2000, p. 2). IWRM therefore is seen as a process in which management needs to address the interactions between humans and nature, land and water, surface water and groundwater, quantity and quality, upstream and downstream uses, domestic and foreign actors, and relationships among water users (Ahsan & Gupta, 1999; Calder, 2012; Carter et al., 2005). Researchers have argued that a shift from top-down administrative governance and hierarchical

structure, towards more collaborative governance and multi-level structures will be necessary to achieve this (Newig & Fritsch, 2009; Yang et al., 2016).

2.1.2 Challenges of integrative approaches

IWRM has become widely adopted in the field of water management and governance – at least in principle. It is arguably the most common set of principles underpinning water management globally. Due to the popularity of IWRM, it has been reiterated and applied by various stakeholders and countries for more than two decades (Calder, 2012). However, IWRM has also received a lot of critique regarding its conceptual basis and practicability. Notably, Biswas (2004) argued that even though the concept may be well-intentioned and convincingly defined, it remains amorphous. Its effectiveness in addressing real-world environmental problems remains unclear. Barriers to achieving the process of integrative management have been detailed by several studies, many of which have also proposed measures to overcome these constraints (Hjorth & Dan, 1994; Hooper et al., 1999; Turton et al., 2007; Grigg, 2008; Hering & Ingold, 2012). The most frequently cited challenges are institutional structures that either do not fit the integrated collaborative approach, or do not devote sufficient resources to implementing the approach. Particularly, these issues include institutional fragmentation, traditional top-down approaches, and strongly centralized governmental structures. These issues are elaborated on below.

Institutional fragmentation

As discussed above, IWRM implies the harmonization of factors and actors that are related to water. Coordination and collaboration among government agencies at the same administrative level (horizontal), as well as across levels (vertical) is needed. Alignment and coherence between policies addressing different sectors is also required (Benson & Lorenzoni, 2017). Bureaucratic fragmentation and administrative separatism in some countries has posed a challenge to integrative approaches (Hjorth & Dan, 1994; Hooper et al., 1999). Waibel et al., (2012) examined the case of the Mekong Delta of Vietnam to understand the gap between official policies based on IWRM principles, and implementation on the ground. They concluded that the existing gap is not due to poor capacity or resource constraints, but the ‘peculiar structural features’ of the Vietnamese government system. They argued that the management structure of the water sector had become even more complicated after multiple

sectoral reforms, between 1980 and 2002, which resulted in increased institutional fragmentation, with more ministries having a stake in water management. Hence, fragmented governmental organizations can frequently hamper the processes and outcomes of attempts to implement IWRM (Molle & Hoanh, 2011; Waibel et al., 2012).

Similarly, Calder (2012), in an international collection of IWRM case studies, found that the lack of supportive institutional mechanisms and linkages in planning between land and water sectors can significantly constrain the governance of these resources. Administrative fragmentation has also been identified as a significant contributing factor in failures in transboundary water pollution management (e.g. Sajor & Minh Thu, 2009).

Several measures have been identified and advocated by scholars as a means to overcome some of the challenges of fragmentation in institutional structures and planning. One relevant factor appears to be a clear established mechanism for coordination, collaboration and information exchange. Such a mechanism would link involved stakeholders and help to secure the coordination of water management across sectors and levels, and between agencies, in order to identify and advance shared interests (Simalabwi, 2007; Doolan, 2007). For example, the formation of a catchment management authority on the Victoria River, Australia, has proved effective. The Victorian River Health Programme, which was built on a foundation of community involvement, is regarded as the most successful river management program in Australia (Doolan, 2007). The program identifies clear institutional arrangements supporting integrated river management, and identifies clear roles of stakeholders at different levels. At the state level, the Victorian Department of Sustainability and Environment is responsible for developing policy, strategic direction and legislative frameworks for catchment management. At the regional-level, Catchment Management Authorities, community-based statutory authorities, play the main role in implementation. Drawing on research into planning processes in Malawi and Zambia, Simalabwi (2007) recommends the establishment of a formal mechanism for cooperation and information exchange to secure the collaboration of different sectors. This can create an environment for various stakeholders to coordinate and consent on appropriate governance structures.

Top-down management

According to the principles of IWRM, an essential factor in an integrative approach is the interaction, coordination and cooperative participation of multiple stakeholders. However,

traditional top-down management is often characterized by a lack of truly multi-stakeholder participation. This top-down approach also usually leads to unequal allocation among water users by prioritizing certain values and uses over others (Calder, 2012; Gupta, 2005). Where top-down governance is strongly hierarchical, it concentrates decision-making power and privileges central authorities and government ministries in water resource management. This tends to mean limited participation of local communities and other governmental agencies, as well as mismatched implementation (Phuong et al., 2018; Jusi, 2013). In a recent study of climate change adaptation in hierarchical government systems, Phuong et al. (2018) examined a central province in Vietnam and found that the institutional constraints posed by top-down governance led to mismatches between the aims of central government and those of the local government. The lower levels usually seek to adapt central government policy given their specific local context, but there are no formal or informal policies to enable this. Indeed, the central government authorities generally expect the lower levels to simply implement policy and legislation.

Among Western democratic countries, there has been a widespread tendency to open up decision-making to participation by a wider range of stakeholders (Hogl et al., 2012). Citizens and other non-government actors have insisted on having more say, but governments have also sought to involve more actors and pass on some responsibilities (Beierle & Cayford, 2002). Processes of decentralization have also devolved authority away from central governments towards local levels giving rise to multi-level governance arrangements. However, this has not happened to a great extent in Vietnam (Fritzen, 2014), particularly in the context of IWRM.

In South Africa a new National Water Act legislated in 1998 sought to reduce top-downism (Schreiner, 2007). It provided a mandate and devolved authority to Catchment Management Agencies, which include representatives of local governments, water users and communities, to actively plan and make decisions in water management planning activities. Similarly, River Basin Organizations or similar entities (e.g. basin water management boards, water boards, basin committees) have been established in many regions, such as Asia (e.g. Vietnam, China), Latin America (e.g. Brazil, Mexico), Europe (e.g. Spain, Russia) and Australia and New Zealand (Delli Priscoli & Wolf, 2009; Jager et al., 2016) in order to encourage and promote the involvement of local–level agencies and communities. The effectiveness of such re-structuring of water management and planning, in terms of progress towards the sustainable management of water resources, however, remains unclear.

Centralized locus of power

One of the aims of establishing River Basin Organizations (RBOs) is to create effective decentralized authority at an appropriate local scale as advocated by IWRM. However, the decentralization of management activities and the involvement of local stakeholders are problematic for government departments, especially those that are used to centralized, top-down methods. In a study of RBOs in Latin American countries, Tortajada (2005) concluded that basin organizations have faced difficulties due to the complexity in government systems and reluctance on the part of central governments to give up their power (see also Sajor & Minh Thu, 2009). Many scholars have further suggested that the establishment of RBOs in some countries likely remains more a response to the current global trend or a strategy to attract financial support, than a response to water management issues. For instance, pilot RBOs in Thailand lack authority because their roles and powers are not recognized in law (Sajor & Ongsakul, 2007) and their scope to alleviate water resource challenges is severely limited. The situation is similar in Laos, Cambodia and Myanmar, where RBOs only exist as statements of broad goals and targets (Molle, 2005). This also describes to some extent what has happened in Vietnam, where RBOs were established to address recurring water crises, such as flood damage, in the context of water reforms instituted by development banks and development cooperation partners (Molle & Hoanh, 2011). According to Molle and Hoanh, these development banks, particularly the Asian Development Bank, and development partners seek the incorporation of international norms and management principles related to water resources in the drafting of national laws and policies in South East Asia. However, these norms and principles may not necessarily transfer easily to all nations and local communities. This is further discussed below in Section 2.3.

Several factors may lead to a shift away from strongly centralized natural resource management. Turton et al. (2007) suggested that the creation of a new generation of water managers, with interdisciplinary perspectives and skills, may drive such a shift. Other factors such as community mobilization, grassroots activities to create bottom-up pressures, and extension of a legal mandate to basin-level authorities, have also shown to be essential (Doolan, 2007; Naustdalslid, 2015).

2.2 Integrated water resource management in the Vietnamese Mekong Delta

The Mekong River Basin

The wider Mekong River basin covers an area of 795,000 km^2 and is one of the largest river systems in the world (Tuan et al., 2007). With a total length of 4,800 km, the Mekong flows through six countries – China, Myanmar, Thailand, Lao PDR, Cambodia, and Vietnam – and supports more than 60 million people living in the basin.

The Mekong Basin, however, is undergoing rapid political, economic, social and environmental change (Miller et al., 1999). These fundamental changes are resulting in increasing economic integration among the countries in the region (Molle et al., 2012). The basin therefore faces intensified natural resource exploitation, while its social and environmental systems are increasingly sensitive to climate change (Tuan et al., 2007). Large-scale infrastructure projects that are proposed for the region stand to have significant impacts for downstream countries and the environment (Molle et al., 2012)

The 1995 Mekong Agreement, signed by Vietnam, Lao PDR, Thailand and Cambodia (and, significantly, not China), requires that activities in the basin aim for the sustainable development, considering the balance between economic, social, and environmental aspects. Management of water resources in the basin should ideally be integrated and collaborative so as to minimize the risk of resource conflicts within and between member states. The riparian countries that share the river have different in it (Molle et al., 2012). While China and Lao PDR focus on hydropower development, Cambodia values the freshwater fishery resources. Other countries, such as Myanmar, Thailand, and Vietnam are interested in the river as a source of water for irrigation.

The role of Mekong River Commission (MRC), established under the 1995 Agreement, is "To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being". In practice, water management in the Mekong Basin is shaped by the National Mekong Committees of the four countries and MRC. Despite the Mekong Agreement and the work of the MRC, the task of managing the Basin in an integrated way is hugely complex and difficult, given the competing national interests and complex regional politics (Lebel et al. 2005; Ratner 2010; Campbell, 2016).

The Vietnamese Mekong Delta

Although Vietnam lies at the bottom of the Mekong River system, it has different stakes in the river, including interests in exploiting hydropower (in the Central Highland, for example), and accessing water for livelihoods in downstream areas, where the Vietnamese Mekong Delta (VMD) faces increased pressures from upstream uses. The VMD accounts for a high proportion of agricultural production of Vietnam, contributing approximately 50% of national rice production (and 90% of rice exports) as well as 70% of aquaculture and 60% of fruit production in 2016 (General Statistics Office, 2016). The deltaic floodplain, which covers approximately 40,000 km^2, is home to 19 million people, whose livelihoods are highly dependent on agriculture and the natural resources that underpin it.

Agricultural development, and particularly rice cultivation, have increased significantly in the VMD since the 1980s, as has irrigation infrastructure and water use. Consequently, water resources in the VMD have been impacted, and are increasingly sensitive to the effects of climate and further development (Hirsch et al., 1996; Miller et al., 1999; Hoa et al., 2007; Kettner et al., 2009; Lebel et al., 2014; Miller, 2014; CGIAR, 2016;. Many of the environmental problems and water resource issues faced in the VMD stem from uses of the river outside of Vietnam. For example, the flow regimes and nutrient yields in downstream areas have been altered by the operation of hydropower dams. Chinese dams in upstream areas are the primary factor in nutrient and sediment decline in the rivers of the VMD (Lu & Siew, 2006; Manh et al., 2014), and such problems may continue to be a source of major conflicts among water users within the delta in the future.

The Plain of Reeds

In the northern part of the VMD, water is naturally stored in two water storage zones, the tide-affected floodplain (Long Xuyen Quadrangle) and the high floodplain (Plain of Reeds). These zones are important to rural livelihoods and socioeconomic development in the delta, and are a source of resources such as water, natural sediments/nutrition, and aquatic resources, as well as climate change mitigation and flood retention services[1] (Berg et al., 2017; Nguyen et al., 2017). The Plain of Reeds (POR) is a vast wetland depression area of approximately 700,000 hectares in the Northeast of the VMD (Van Ni et al., 2006). It encompasses three provinces –

[1] During flood season, water is naturally stored in these zones and slowly released in the dry season, which helps mitigate saline intrusion.

Dong Thap, Long An, and Tien Giang. The POR's wetland ecosystem underpins significant biodiversity values (Kiet, 1993; Buckton et al., 1999), and helps to regulate downstream flooding of the Mekong River (Mekong Delta Plan, 2013). An example for the ecological value of the POR is Tram Chim National Park, located in Dong Thap Province, which is listed as a site of considerable interest for the conservation of the globally endangered Eastern Sarus Crane (Nguyen & Wyatt, 2006). However, this sub-region also contains a lot of potential acid sulphate soil which can be easily activated through digging or tilling (Husson et al., 2000; Nhan et al., 2007). Activated acid sulphate in this upper area can deliver heavily polluted acidity and metals into drainage systems resulting in adverse impacts on other values in downstream areas (Miller et al., 1999). Integrated WRM and planning in the POR, therefore, should involve the jurisdictions of the three provinces - Tien Giang, Long An and Dong Thap. However, inter-province collaboration and participation is typically difficult in Vietnam (Tu, 2011; Ho et al., 2012). However, there has not, as yet, been a stay that has explored the issue of collaboration and coordination among these provinces in environmental management in the POR region.

2.3 Multi-level environmental governance

In order to study the factors constraining integrated management of water resources in the POR, it is necessary to approach the cross-border sub-region in the context of its place within a multi-level governing structure within Vietnam. A useful means for doing that is from the perspective of multi-level governance. Theories of multi-level governance depart from traditional governing arrangements, where authority typically has sat with government departments and officials as the dominant actors in decision making on public services and administration (Stoker, 1998). In contrast to this model, however, it is increasingly recognized that coordination and participation of actors across multiple sectors and levels is important for effective and legitimate governance (Peters & Pierre, 2001). Therefore, it has been argued that governing arrangements – in many fields, but particularly around environmental issues – are shifting from 'government' with a hierarchical structure, to 'governance' with wider participation of stakeholders, promoting collective interests of diverse actors rather than decision-making by experts and politicians (Stoker, 1998; Calder, 2012; Cosgrove & Rijsberman, 2014). The participation of diverse actors, such as non-government organizations, local people, and social networks, in decision making has indeed become a core value of contemporary environmental governance. However, as Jordan et al. (2005) have pointed out, this shift to include a wide range of actors is does not mean the states are no longer important.

Rather, governance arrangements involve both state and non-state actors. This is particularly the case in the Europe Union, where the these authors are working, but the role of new, non-state actors is arguably more limited in the Vietnam context (Painter, 2005; Fritzen, 2014), as discussed in section 2.4.

While the balance of state and non-state influence in governance varies, it is generally true that no single actor can effectively govern or manage complex environmental issues alone (Armitage, 2008). Different groups in a society usually possess unique perspectives, abilities, knowledge and experience, and are needed to help understand a problem from different angles. By understanding the problem more comprehensively, society can then seek appropriate solutions. Therefore, multi-level governance arrangements that incorporate various embedded actors across levels and sectors is essential to respond appropriately and effectively to environmental problems.

Multi-level governance scholarship has developed from the early 1990s out of studies on European integration. Most conceptual and empirical research from a MLG perspective has focused on the European context. Peters and Pierre (2001) defined multi-level governance (MLG) as the negotiation and non-hierarchical exchange between institutions at various levels, including the transnational, national, regional and local levels (Jachtenfuchs, 1995; Hix, 1998). MLG has also been described as encompassing networks and co-operative relations among both state and non-state actors, which are seen as increasing opportunities for stakeholder involvement in public decision-making processes (Pierre & Stoker, 2000). According to Hooghe and Marks (2003), MLG refers to the dispersion of "authoritative decision-making" across multiple sectors and territorial levels. As the distinct features of 'multi-level' and 'governance' have been discussed, these multiple territorial levels contain both vertical and horizontal dimensions (Piattoni, 2010). The former usually indicates the connection and co-operation among administrative levels from the central government to the local level. The latter denotes collaboration among state and non-state actors and the participation of non-state actors in decision-making. The term governance "is used to imply an appreciation of an increasingly complex state-society relationship in which network actors are prominent in policy-making and the state's primary role is policy coordination rather than direct policy control" (Bache & Flinders, 2004, p. 35).

2.3.1 Two types of multi-level governance

As discussed above, a multi-level governance perspective helps to understand complex governance structures in a range of policy sectors (Stoker, 1998; Naustdalslid, 2015), and highlights heterogeneity in governance structures (Bache & Flinders, 2004). Hooghe and Marks (2003) have distinguished two major types of MLG structures (see Table 2.1), based on power diffusion between the involved actors, either horizontally or vertically. Type I reflects the hierarchical and nested structure of government and administrative bodies across levels, such as international, national, regional, and local governments and their agencies. In this type of governance structure, the state usually takes an important leading role in decision making (Eckerberg & Joas, 2004). Eckerberg and Joas (2004) further argued that even though the role of national government can be eroded from several directions, it still maintains leadership in most policy-making processes.

Meanwhile, Type II implies a more lean and flexible but task-specific design, including multiple jurisdictional levels and multiple actors at any given level (Hooghe & Marks, 2003). In this type of governing arrangement, responsibilities and powers can be distributed from formal state-authority to non-government actors (Eckerberg & Joas, 2004). The legitimacy of decisions is also different between the two types. Type I governance is more dependent on formal authority while Type II governance gains legitimacy to a greater extent from being more inclusive and of a number of agencies and actors.

With full participation of different actors and levels, these two general types of MLG can provide meaningful contributions to environmental decision-making by increasing "problem-solving capacity and broadly beneficial and legitimate policies" (Daniell et al., 2014, p. 2417). MLG processes can be either effective or ineffective "depending on the results of the participation of the actors and institutions and their collaborative interactions" (Ho et al., 2012, p. 2).

Table 2.1: Types of Multi-level Governance

Type I Multi-level Governance	**Type II Multi-level Governance**
General-purpose jurisdictions	Task-specific jurisdictions
Non-intersecting memberships	Intersecting memberships
Limited number of jurisdictional levels	Many jurisdictional levels
System-wide architecture	Flexible design

Source: (Hooghe & Marks, 2003, p. 236)

As Table 2.1 shows, there are several characteristics that characterize Type I MLG. Typically, power in decision-making is spread across a limited number of jurisdictions, which have a wide spread of functions and are responsible for comprehensive management of all concerns in their administrative areas. In Type I, the administrative/territorial boundaries are strongly defined and there is no intersection between the higher and lower tiers. The institutional structure is nested, or organized from larger to smaller jurisdictions, and the total number of jurisdictions is relatively limited. Type I multi-level governance arrangements are also largely the product of a long-established political and legal system, and rest on relatively durable institutions (Hooghe & Marks, 2003, p. 237). This type of governance implies a hierarchical management structure, and top-down decision making.

By contrast, Type II MLG arrangements are characterized by flexible, task-specific jurisdictions, which draw on a wider range of actors relevant to addressing a given problem or policy area. This also means that the different jurisdictions in Type II MLG can overlap with each other. This type of overlap is characterized as intersecting memberships, whereby different actors may participate in multiple jurisdictions and across multiple levels. In contrast with Type I, Type II is more prevalent at the local level rather than at the central level. Frey and Eichenberger (1999) coined these jurisdictions as "FOCJ - functional, overlapping, and competing jurisdictions" because these jurisdictions are not limited to their own boundaries (see also Hooghe and Marks, 2003). In Type II MLG, there are also many jurisdictional levels, and borders and levels are frequently 'crossed' due to a more flexible governance model. Finally, this flexibility means that Type II MLG may also be better able to respond to citizens' preferences. Overall, Type II differs from Type I in its task specificity and flexibility to address an issue through collective decision making across shared geographical or functional space.

2.3.2 Application of a multi-level governance approach

In the context of constitutional and institutional reform in Britain, Bache and Flinders (2004) applied a MLG approach to understand the changing nature of the British State and to compare effectiveness in management of resources between multi-level polity and the Westminster Model. Their results show that despite having some limitations, the interactions of multi-stakeholders in the governance structure of the British State has shown great potential compared to the Westminster Model. In particular, potential advantages include more negotiation in decision-making, rather than centralized power; and more interdependence rather than hierarchical arrangements.

In their study conducted in South Vietnam, Anh et al. (2011) used a MLG perspective to investigate governance arrangements related to the implementation of standards and certification schemes aimed at promoting sustainable and environmentally friendly shrimp and pangasius aquaculture. The rapid expansion of aquaculture in Vietnam, in response to rising export demand, has had serious environmental impacts. The concerns addressed by Anh et al. (2011) were waste prevention and minimization, and treatment and reuse of effluent flow. They found that, despite the framing of these governance initiatives – described as an 'aquaculture dialogue' – arrangements remained rather state-dominated, and there was poor representation of all levels of governance at the provincial-level meeting. With the absence of international members at the meeting, it was impossible for authorities to create strong links between the local levels of participants in the aquaculture sector with the demands of international markets. Furthermore, government officials were unable to implement international and national standards and laws to reduce effluent flows from shrimp and pangasius aquaculture. The lack of interaction among all three levels of government illustrates minimal advancement in alleviating the environmental concerns caused by the aquaculture industry in southern Vietnam. Thus the study called for better integration among all state and non-state actors across levels.

A MLG perspective can potentially help to understand the governance and management of water resources in Vietnam. Anh et al. (2011) highlighted the significance of cross-scale linkages among multiple stakeholders in the aquaculture sector, and the same can be expected for non-aquaculture projects. This study adopts a MLG perspective because of its potential to make sense of complex governance structures and interactions in today's interconnected society. All levels and stakeholders need to be considered to gain an understanding of the development and implementation of policies in the water sector. Without understanding how local administrations work to implement said policies, collaboration and coordination among all three levels (provincial, district and commune government) are likely to be ineffective.

Flowing through different administrative territories (transnational, national, regional, and local), water resources are often the object of a range of conflicts among different stakeholders at different levels and across sectors. It is commonly argued that water should be managed through the cooperation and collaboration of all actors in network-oriented models of governance (Carter et al., 2005; Calder, 2012). Indeed, water management requires an approach that can address the complexity of water resources to balance the demands of diverse water

users at different scales (Doolan, 2007). The relationships among actors across levels engaged in managing water often appear as a highly complicated structure (as described in Section 2.1).

Looking at complex governance structures through a MLG lens allows scholars to determine the interdependence of governance structures at different levels, and also to identify the challenges for policy implementation and governance within these structures. In this study, a MLG perspective was applied to examine the case of WRM in the POR, Vietnam. The POR is seen as an ecological region and management unit embedded in a complex MLG system, and it is argued that in order to understand the key challenges in WRM and planning in the region, it must be understood in this wider governance context.

2.4 Multi-level structure of water management in Vietnam

A strong hierarchical planning approach is very influential in Vietnam given the centralized party-state system (Sajor & Minh Thu, 2009; Waibel, 2010 Ho, 2012). The organizational structure of the Vietnamese government generally can be distinguished into two nested structures, namely a national and a local administrative structure. This structure is discussed in detail in Chapter 5. The local structure includes provincial, district and commune governments. There are sectoral agencies at each government level responsible for administrative processes. At the local levels (from province to commune) responsibility for general management, planning and implementation of national policy rests with People's Committees. Other agencies such as central government ministries and sectoral departments at provincial, district and commune levels are responsible for specific matters in their respective policy areas.

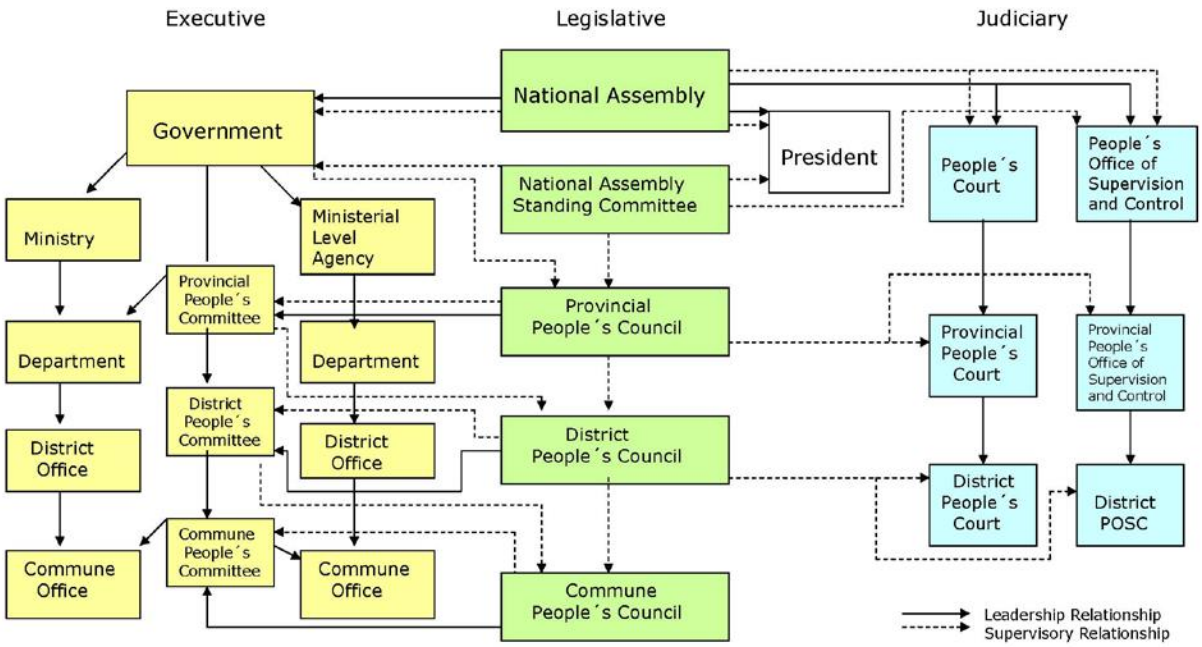

Figure 2.1: Organization of the Vietnamese political system based on the revised 1992 Constitution
Source: Pforde and Associates Pty Ltd (2003) (as cited by Waibel, 2010, p. 12)

In water resource management in Vietnam, there are several agencies involved in different management functions. The key agencies are the Ministry of Natural Resources and Environment (MONRE) and the Ministry of Agriculture and Rural Development (MARD). MONRE currently has primary responsibility in water management and natural resources and environmental management in general. After its establishment in 2002, MONRE inherited a responsibility for WRM from MARD, to separate out public water supply from water resource management more generally (Waibel, 2010). Since then, the Department of Water Resources Management (DWRM) of MONRE has played the main role in water planning and strategy development, including the reviews of related laws and policies, targets and objectives of water reforms and projects.

The transition process, however, was initiated without a government decree on the revised responsibilities of MARD. Consequently, this has resulted in a "long-lasting inter-ministry conflict" (Waibel, 2010, p. 28) and confusion in management responsibilities between the two ministries (Molle & Hoanh, 2011). The conflict between these ministries has been described as a "turf battle over roles" (Molle & Hoanh 2011, p. 4), where the responsibility for national water management has been disputed between the two ministries.

The turf battle between MARD and MONRE surfaced in 2006 when both ministries issued overlapping national strategies on WRM[2]. While MONRE delivered the 'National Water Resource Management Strategy to 2020', MARD published its 'Strategy for Sustainable National Water Resources Development and Management'. As a result, the Prime Minister had to issue new legislation to clarify the roles, tasks and responsibilities of the two ministries. This law clearly identified the main responsibility for WRM as belonging to MONRE.

Besides MARD and MONRE, water management in Vietnam also involves a range of other sectors, including agriculture, biotechnology, hydropower, water supply, and sanitation. Although MONRE has primary responsibility, duties in managing water are spread across several ministries (see Table 2.2).

Table 2.2: Water management responsibilities of Vietnamese government ministries

Ministry	**Water-related responsibilities**
Ministry of Trading and Industry (MOTI)	Implements and operates hydropower schemes.
Ministry of Science and Technology (MOST)	Sets water quality standards and carries out research and environmental management through the EIA process.
Ministry of Construction (MOC)	Sets regulations, designs, and constructs water supply and sanitation facilities through design and construction companies.
Ministry of Transport (MOT)	Prevents and protects water pollution by marine shipping.
Ministry of Health (MOH)	Sets regulations for domestic and drinking water standards.
Ministry of Planning and Investment (MPI)	Plans and allocates investment on water projects

Source: Author (2018)

As discussed in section 2.2 above, water governance in Vietnam is also influenced by international institutions, and in particular by the Mekong River Commission. Although Vietnam shares several river basins with neighboring countries, the National Mekong Committee of the MRC is the only international river basin organization in Vietnam. It assists the Prime Minister in cooperation with the MRC. Although the MRC applies an integrated

[22] Part of the explanation for the confusion in this sector is to do with the shortcomings of both ministries. MARD was criticized as being heavily biased towards structural and engineering methods and narrowly focused on irrigation and flood management issues. On the other hand, MONRE was seen as weak in terms of technical resources.

approach to encourage collaborative WRM among the four riparian member nations, it does not work directly on water projects in Vietnam. For this region, the thesis considers the context of Vietnam's international water resources, but does not focus on the MRC or other international governance mechanisms.

Vietnam has also integrated a river basin management approach into policy, and established River Basin Organizations (RBO) following the international popularity of IWRM and the requirements and recommendations of organizations such as the Asian Development Bank and the Global Water Partnership (Taylor and Wright, 2001; Molle and Hoanh, 2011). River basin management was initially promulgated in Vietnam in the Law on Water Resources (1998). According to the law, the river basin should be the primary planning and management unit for water resources; however, the law does not provide clear roles and functions for RBOs (Molle & Hoanh, 2011). In 2001, although the roles and functions of RBOs were finally clarified, these remained limited to advisory and coordinating functions. RBOs were not given adequate authority to lead basin management. Within the same year, the first three pilot RBOs were set up, one in the Red River Delta, and two in Ho Chi Minh City. The establishment and implementation of RBOs in Vietnam has, however, faced many constraints. These include issues related to funding and capacity building, which were mainly dependent on donors. The ADB and the Australian government provided assistance (Taylor and Wright, 2001; Waibel et al., 2010), but the RBOs never worked effectively and have therefore played little or no role in WRM in Vietnam. In part this has been attributed to a low level of interest from the Vietnamese government (at central and provincial levels) in the river basin approach (Tu, 2011). As Waibel et al., (2012) argue, provincial authorities in particular believe that the establishment of RBOs would result in the potential transfer of decision-making powers from the provinces to a new established inter-provincial body leading to a loss of decision-making authority at the provincial level.

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This chapter has outlined some of the key debates in the literature about the principles of IWRM, as well as the challenges of IWRM in practice. It was shown that integrative approaches in environmental governance and water management are not only a global trend, but have been found to have helped improve water governance and management in some regions. IWRM, however, may face many challenges in practice, such as the fragmentation in government structure, top-down management, and centralized political power. Research has examined approaches to IWRM or integration more generally in the Mekong Basin and the Vietnamese Mekong Delta, and found these challenges to be present in this context. The chapter also introduced the multi-level governance perspective, and discussed the difference between two types of MLG. This perspective has proven useful to understand the interaction and participation of different actors in governance in a range of settings, and will be used to inform this study. Finally, the chapter also discussed the multilevel organizational structure of water management in Vietnam, as described in the literature. This showed that planning and decision making in Vietnam is still characterized by a primarily top-down and single sector approach, and is viewed as a process of implementing the plans and strategies of the central government. Water management in Vietnam confronts great challenges since it involves many different sectors and levels of government. These fragmentations create a complexity in management and potential challenges in WRM and planning. The following chapter describes how this study was conducted.

3. Methods

This chapter describes how the study was conducted and outlines the research approach taken. To answer the research questions regarding the key challenges in water resources management (WRM) in the Plain of Reeds (POR) in Vietnam, a qualitative case study approach was applied. The study drew on multiple sources of information to identify and analyze the challenges of water management and planning in the study area. Particularly, primary data was collected through semi-structured interviews with key stakeholders and focus group discussions with local water users. The interviews were carried out with key informants involved in water management and planning, such as the staff of government agencies at the local levels (provincial, district, and commune), research institutes, water supply companies, and non-government organizations (NGOs) based in Vietnam. Focus group discussions (FGD) were also conducted in the study area to gain insight into the local communities' views on water user representation, as well as their perspectives on water resources generally. One formal and two informal group discussions were conducted in the provinces of Long An and Dong Thap. Information was also gathered from secondary sources, including academic literature, government reports, and Vietnamese online databases.

The following section (Section 3.1) outlines the multi-level research design and the qualitative research approach that guided the study. It discusses why a multi-level design is appropriate for an investigation of cross-border resource management. Section 3.2 explains the data collection techniques used in the field. This section also addresses the process of securing approval from the University's Human Ethics Committee, as one of the key requirements to be met before commencing data collection. Section 3.3 discusses data analysis methods. Finally, in Section 3.4, I offer some reflections on the fieldwork process.

3.1 Research methodology

This study adopted a multi-level research design, and qualitative methods to investigate key factors constraining integrated water management and planning in the Plain of Reeds sub-region in Vietnam. This approach was expected to facilitate identification of key actors and institutional factors across multiple governing levels, as well as eliciting stakeholders' perspectives and opinions on water resource management in the case study area, and barriers or challenges to effective integrated management. A qualitative case study approach was deemed appropriate for exploring the topic of interest in this research, since the focus was on

how multiple aspects of water governance play out in a particular sub-region, and how this is perceived by key actors (Gerring, 2007). It is expected that this case study will be useful for interpreting the wider field of water resource management and, especially attempts to implement and achieve integrated water resource management in complex cross-border settings. The case of WRM in the Plain of Reeds should be instructive for other case studies in different settings (Flyvbjerg, 2006), which have sought to apply a multi-level governance lens to examine challenges to integrated management. This case study also provides evidence that may be useful in the development of future studies to encourage IWRM implementation in Vietnam. As mentioned in Chapter 2, there is limited research done on water management in the POR, and this case study seeks to contribute to addressing that gap, as well as encourage future studies to advance effective WRM in the region.

The multi-level research design helped to view the POR as a cross-border sub-region or management unit embedded in a complex multi-level governance system in Vietnam. This is clearly evident in the POR, which intersects three provinces (Dong Thap, Long An, and Tien Giang), and numerous districts and communes beneath them. Furthermore, the multi-level perspective adopted in this study helped to identify the horizontal and vertical interactions among stakeholders and responsible agencies in WRM. This perspective was chosen to understand links within the government structure, and the multiple jurisdictions and agencies that bear some responsibility for policy and planning in the POR region. As the research is interested in the main barriers to integrated management of water in the POR sub-region, it focuses on the two provinces Dong Thap and Long An, which have most influence in the POR. Within these provinces, the field research involved interviews with government and administrative officials at the district and commune levels.

Employing a qualitative approach, research collected through interviews helped to gain a deeper understanding of the constraining factors behind water resources management. According to the literature, qualitative research is important and widely applied because it explores underlying factors to explain or clarify the topic of interest (Neuman, 2013). According to Hay (2005), qualitative research helps to obtain an in-depth understanding of a topic of interest. It is also a means to analyze the perceptions of research participants (Bazeley & Jackson, 2013). Hence, the qualitative approach to research in this study is essential to comprehending the Vietnamese users' and government officials' perspectives on water resources, to recognize the constraining factors on water resources management, and to propose culturally appropriate resolutions.

3.2 Data collection techniques

This research employed well-established qualitative data collection techniques including document analysis, focus group discussions, and key informant interviews. In relation to document analysis, the study drew on official documents, published texts, relevant policies, and some un-published documents received from different stakeholders, to gain a deep understanding of key processes and challenges in water management and planning in the POR. Primary data was collected by two main approaches – focus group discussions and in-depth semi-structured interviews. These techniques were considered the most appropriate to the study design in terms of getting the required information, and also because of time and resource constraints. The following sections describe the implementation of the research, and how these three techniques were applied in the study.

3.2.1 Human Ethics Process

Prior to any data collection, the research proposal, and in particular the field research plan, was reviewed and approved by the University of Canterbury Human Ethics Committee[3] in accordance with University policy. The research was also required to follow a range of government protocols before conducting interviews and focus group discussions. These protocols mainly pertain to gaining permission to interview key informants at different levels and agencies. After receiving the human ethics approval letter, contact was made with staff at the Mekong Delta Development Research Institute (MDI) at Can Tho University. MDI is a reputable research institute in the area, and is well-known to, and familiar with, government authorities and communities in the study area. I was able to obtain recommendation letters that would serve to validate both me as a researcher, and my research. Using these recommendation letters, I contacted potential government agencies and personal connections at local institutes for the next steps of providing information about the research, inviting stakeholders for interviews, and obtaining participants' consent to take part in the research.

Informed consent was obtained prior to any interviews or focus group discussions, and participants were asked to consent in particular to interview recordings and photographs[4]. Because this process was foreign to the participants, with the exception of some experts, much time was devoted to explaining the purpose of the consent process and the provisions for

[3] The approval letter received on the 24 April 2018 (see Appendix A)
[4] See Appendices C, B and D for the participant information sheet and consent form used.

ensuring confidentiality. It was clearly explained to the participants that they could withdraw from the research process, and retract any information provided up until 1 December 2018. In some cases, when participants were uncomfortable with the interview being recorded, notes were manually written down.

To protect participants' identities, in accordance with the requirements of the ethics approval, participants' names are not used in this thesis and neither is information that might otherwise lead to the identification of participants. A code was assigned to each participant for this purpose and is used throughout this thesis. Vietnamese was the language used during field research to ensure that all communication was understood by participants. All forms were also translated into Vietnamese. The interviews and focus group discussions were then transcribed into text and translated into English. Both interviews and discussions were electronically recorded by a digital voice recorder and a smartphone where permission was granted by participants in advance.

3.2.2 Document Analysis

Secondary data were collected to establish a picture of key policies and actors in water management across administrative levels and scales in Vietnam, from the international to the local level. This perspective provides a wider context for the analysis of the primary data collected regarding water resource planning and uses in the study area. Secondary data sources included public materials such as news-media reports, published academic articles, and national policies and strategies. Five key pieces of Vietnamese legislation were analyzed: the Law on Water Resources 2012, the Law on Environmental Protection 2014, the National Strategy on Water Resources to 2020, the Prime Minister's Decision No. 593/QD-TTg for the "Pilot Association in Socio-Economic Development of the Mekong Delta river region during 2016-2020", and Resolution No. 120/NQ-CP on the "Sustainable and Climate-Resilient Development of the Mekong Delta". Additional published information and official documents such as technical reports and internal decisions were also analyzed. These were collected from the Ministry of Natural Resource and Environment (MONRE), the Ministry of Agriculture and Rural Development (MARD), the Mekong Delta Development Research Institute (MDI), the Research Institute for Climate Change (DRAGON Institute) at Can Tho University, and the International Union for Conservation of Nature (IUCN). However, it is important to note that some potentially important planning documents and official reports were not available due to

several limitations. These restrictions are associated with the political context of Vietnam and the government's unwillingness to share certain information. For example, regional decisions at the provincial level regarding the implementation of Decision 593 in the provinces of the POR were not provided and are also not publicly available. Accessing these internal documents would require permission from higher level government officials, which would unlikely be obtained for student-led academic research purposes. Consequently, this study was conducted without access to high-level government officials.

3.2.3 Focus Group Discussions

Focus group discussion (FGD) is a qualitative research method originally applied in market research to determine and value diverse participants' experiences and perspectives. In addition to providing a range of in-depth information on participants' perspectives (Hay, 2005; Neuman, 2013), this method can also help to establish trust in the communities that are the focus of research (Hennink, 2013), and thereby aid more effective data collection in later stages, such as through informal discussions and interviews. In a focus group setting, the researcher takes on the role of facilitator and observer, providing the researcher with an opportunity to understand the regional and social issues through face-to-face discussions among participants in a small group. Hennink (2013) suggested that the number of participants in a FGD should be between five and ten. While focus groups that are too large may be ineffective due to too many overlapping ideas, very small groups may not provide adequate information. Hay (2005) argued that focus group discussions are a very useful tool for the researcher to generate and develop research questions. This study drew on the FGDs to further develop additional interview questions, on top of the pre-existing questions, and identify areas for discussion that the study had not anticipated in advance. Furthermore, this method allowed the research to capture a diversity of participants, which produced a rich discussion. This study has conducted a FGD with a homogeneous group in order to obtain various opinions on a particular topic, water-related issues. Therefore, FGD has been widely applied in NGO work, social science and environmental management studies (e.g. Anh et al., 2018; Vo et al., 2013; Ho et al., 2012). FGD was employed in this study to gain insight from the perspective of the local communities incorporated into the decision making process for water resources management in the POR.

Community FGDs were convened with key water users and local government officials at the commune level at Phu Thanh B Commune in the Tam Nong District of Dong Thap Province,

and at Binh Hoa Trung Commune in the Moc Hoa District of Long An Province. While it would have been ideal to have FGD with the district and provincial officials from these two provinces, it was not possible to recruit them for FGD without government permission. Only a high ranking official would have been able to assemble the government actors for a FGD. Their perspectives were therefore collected individually via interviews. The FGD yielded general information on the views of local officials and water users regarding current water usage and management. Each FGD in this study was conducted with groups of between 5 and 7 participants, who shared similar experiences related to water issues. As a formal protocol in Vietnam, the local authority must be informed of the recruitment of research participants, as research is monitored by the government. The local authority then recommends participants for the study and organizes the group discussion. Participants from the community were chosen based on the researcher's recommendation to the local authority in order to assemble participants of varying genders and backgrounds. Participants were mainly farmers who are using water resources for various farming practices that include but are not limited to rice, shrimp, and vegetables (Table 3.1). Local officials only participated in the first formal group discussion.

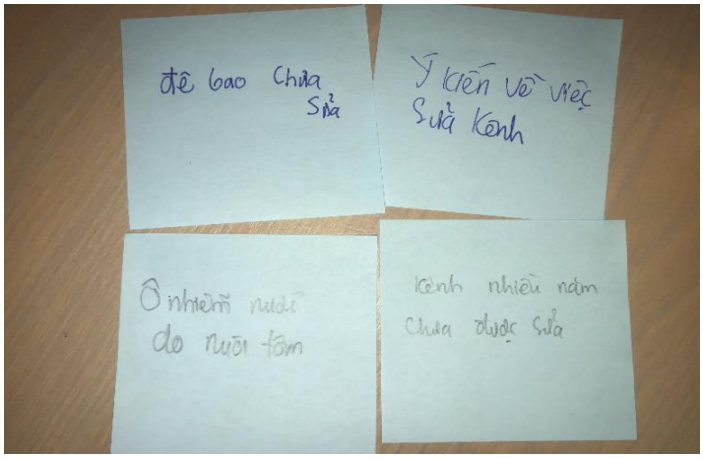
Table 3.1: Summary of group discussion participants

	Formal FGD	**Informal FGD**	
	Phu Thanh B	Phu Thanh B	Binh Hoa Trung
Participants	Farmers (5); Local official (1)	Farmers (6)	Farmers (8)

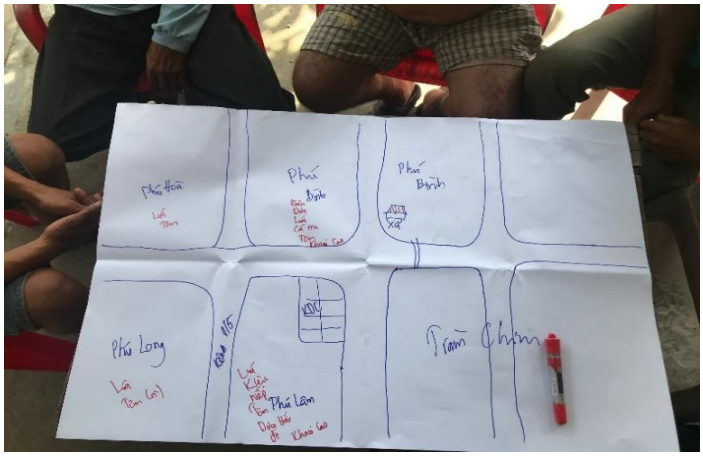
Source: Author (2018)

The FGD began with an introduction to the research and the objectives of the discussion. Participants were then asked to describe their farming schedules throughout a year. This aimed to create a comfortable environment so that participants felt more confident in the discussion. Then, participants were given pieces of paper to write down three major problems regarding water governance and management issues from their perspective and experiences (Figure 3.1). This method protected participants' anonymity allowing farmers to express their honest opinions on such sensitive issues. These opinions were collected and grouped into common themes for further discussion among the participants through open-ended questions facilitated

by the researcher. FGDs took approximately one hour and were recorded by both a voice recorder and a phone. The results of the focus group discussions laid the foundation for understanding basic water use information in the study area. It also helped to refine the interview questions for more relevant in-depth interviews at the later stage.



a) Collected opinions



b) Participants were discussing water-related issues

c) Participants were explaining where issues are located

Figure 3.1: The focus group discussion process
Source: Author (2018)

One of the key concerns of this method was establishing a comfortable setting for the focus group participants that would ensure the effectiveness of participants' contribution, since unfamiliar surroundings may prevent participants from expressing their opinions freely (Hennink, 2013). For this reason, FGDs were conducted in a suitable local public space such as a hamlet office in the commune recommended by the government official.

The first FGD in Phu Thanh B Commune, scheduled at 9:00 am, was cancelled due to the absence of most invited participants. I discovered that that was not an ideal time of day for the discussion, as most farmers were working in the fields at that time. Many local farmers normally started work in the early morning and returned home before midday to avoid the heat. The best time for discussions with local farmers was found to be in the late morning before lunch, between 10:00 am and 12:00 pm.

It was initially planned to conduct one FGD in each of two communes: (1) Phu Thanh B Commune and (2) Binh Hoa Trung Commune. However, after the first formal FGD in Phu Thanh B, which involved the participation of one local official, I realized that farmers felt uncomfortable and not confident in giving their opinions because of the presence of an official. Moreover, the government official dominated much of the discussion. Thus, I adjusted from 'formal' to 'informal' group discussions, which eliminated the participation of the local authority. In order to conduct informal group discussions, I started to work more often at local coffee shops where communities usually gather to exchange information regarding farming methods. By increasing my visibility in the community, I was able to build a degree of trust with the local farmers. I was able to observe their discussions and listen to their perspectives. Gradually, I participated in their conversations by introducing my research topic and asking relevant questions. By doing so, the farmers felt more comfortable to express their opinions. These informal FGDs were applied at the two stated communes. Before going into any detailed discussion with farmers, I introduced the information sheet and consent form in accordance with the human ethics process, and obtained participants' consent to engage in discussion for research purposes.

3.2.4 In-depth Interviews

Interviews were conducted in order to understand the perspectives and experiences of a range of different informants with different kinds of involvement in water management issues in the POR (Hay, 2005; Neuman, 2013). Semi-structured interviews were used in this study to gather

relevant information, but also to generate conversation and discussion on the research topic in the context of the experiences, knowledge, emotions and truths of the interviewees (Neuman, 2013).

A set of overarching interview questions was developed by the researcher prior to the interview to guide the conversation on water resources management (Appendix B). Based on these questions, three types of interview guides were adapted for the different stakeholder groups (community, experts, and officials). This aimed to ensure the relevance of the specific questions to each group, so as to allow respondents to share insights on aspects of water management they were familiar with. Although interviews with local communities can help understand social issues from local water users' perspectives, interviews with government officials are also instructive as they help to uncover the interactions among agencies and jurisdictions, and identify challenges associated with the governance and management of water across levels. Additionally, the role and capacity of the local government authorities were discussed through interviews with all participants, especially those from research institutes and government agencies.

Interviewees were intentionally selected from government agencies across three administrative levels in the two provinces (see Table 3.2). These participants were chosen because they represent agencies and departments involved in water management and planning in the POR. Informants could only be approached after receiving recommendation letters from the local research institute, MDI (Section 3.2). In preparing for the interviews, I travelled to all selected agencies to introduce the research and the aims of the study, and to propose times for the interviews. If the informants agreed to participate in the study, a specific time was then scheduled for interviews. At the start of each interview, the introduction of the study, aims of the research, the anticipated duration of the interview, and participant consent forms were provided to participants. Water service enterprises (such as water supply companies and household water suppliers) were included after their importance in regional WRM became clear from discussions in the initial interviews with government officials. These enterprises were recruited through a snowball sampling technique on the basis of recommendations by government officials.

Table 3.2: Summary of interview participants

	DONG THAP PROVINCE	**LONG AN PROVINCE**
Provincial (5)	DONRE, DARD, and State-owned enterprise	DONRE and DARD
District (5)	**Tam Nong** DiONRE and DiARD	**Moc Hoa** DiONRE, DiARD, and Local water supplier
Commune (3)	**Phu Thanh B** Commune's chairman	**Binh Hoa Trung** Commune's chairman and household water supplier
Research Institutes (2)	MDI, Can Tho University DRAGON, Can Tho University	

Source: Author (2018)

In total, 15 formal interviews were conducted with stakeholders and key informants engaged in aspects of water resource management in the study area. These included 2 experts from research institutes, 2 commune officials, 4 district officials, 4 provincial officials and 3 representatives from water enterprises (Table 3.2). Participants were assigned a unique code for the purposes of analysis and quoting the interview responses in the thesis, in order to maintain their anonymity. They were coded by levels and stakeholder status. For example, 'E' was for participants from the expert field. Similarly, representatives of provincial, district and commune levels were coded as 'P', 'D', and 'C', respectively.

As with the FGDs, the introduction to the study, aims of the research, anticipated duration of the interview, and consent forms were provided prior to the interviews. Once consent was obtained, a voice recorder was used for recording the conversation. Interviews were anticipated to take approximately thirty to forty-five minutes. However, some interviews lasted longer than intended due to the interests of participants and the stories they yearned to share, particularly experts and government officials. Interviews with staff of water enterprises usually finished earlier than expected because mostly simple and brief answers were given. It seemed as though the enterprises were not particularly interested in the study. As mentioned previously, some participants felt uncomfortable being recorded, which required manual documentation. This was not ideal, as the task of note-taking distracted me to some degree, preventing me from observing the interviewees' emotions and stories to the same extent as would have been

possible with audio recording. The use of the voice recorder also provided certain additional benefits, such as better facilitated conversations with interviewees, which strengthened interest and storytelling. Voice recording also allowed more observations on the emotions and body language of the interviewees.

Interviews usually took place either in the offices of interviewees or coffee shops, depending on participants' preferences. Interviewees, particularly officials, tended to become more open when interviews ended and the recorder was turned off. After each interview, personal reflections were jotted down about the information obtained and about interviewees' emotions. Interviews were transcribed on the same day the interview took place, or as soon as possible thereafter, so I could make any additional notes while the conversation was fresh in my memory.

3.3 Data analysis

This study aims to analyze the different roles stakeholders play in water management and planning, and sought to identify: (1) Main water uses in the POR sub-region; (2) Key water management policies, plans, and projects, and key actors; and (3) Challenges in water governance and management in the sub-region.

To analyze the interview data, the software package NVivo was used to group ideas and identify themes. This program has been widely used in qualitative research (Khamvilay, 2017), and proved useful for this research. Data analysis began with summarizing all information gathered via the three methods – document analysis, FGD, and interviews. Interviews were transcribed and translated from Vietnamese to English. These texts were then sorted and analyzed by the researcher using NVivo software, which aids with the thematic analysis of the transcribed data (Bazeley & Jackson, 2013). Using NVivo, I identified conceptual themes that commonly occurred in the data. The qualitative analysis was supported by an extensive review of the literature, including books, public articles, official texts, policies and strategies, assessments, and reports relevant to water management in the study region. These documents provided a crucial contextual understanding of the challenges of water resource management and planning in the POR to complement the interview data.

Notes were also created during the transcribing process to help to identify common themes. This helped me familiarize myself with the gathered information, as well as establish a foundation for analysis. Transcripts were read twice in their entirety, to group important quotes

into three common themes on water management in the POR, as discussed above: major water uses, key actors and policies, and management challenges. These themes were later developed into subsections in the results chapters (Chapters 4 - 6). Based on these results, the research findings were then discussed in light of the literature and recommendations for improving water resource management were made.

3.4 Reflections on fieldwork

After conducting interviews in Dong Thap and Long An Province, there are several issues that are potentially important in coordinating future research and fieldwork in Vietnam.

The first issue is achieving cooperation between Vietnamese authorities and foreign independent research. Without personal networks, researchers may face difficulties connecting with the local people. For example, staff from Can Tho University were important in supporting and guiding the selection and recruitment of interviewees for this research. These interviewees were an essential addition to the qualitative data gathered through FGDs. Additionally, having connections in the country can help build relationships with government officials, who are great local resources. This is because they may be able to provide access to valuable reports, and usually have local knowledge to guide the research in terms of connecting the researcher with stakeholders who can inform the study. According to government protocols, outsiders must present their identities and proposed activities to the local authorities. This process can become more complicated in the absence of a connection or communication with local stakeholders.

In relation to data collection, it is important to be flexible in maneuvering between formal and informal approaches when gathering information from communities. In-depth interviews proved to be quite challenging because many of the participants felt uneasy in sharing their knowledge about and relationships with the government. Although I began the research with the intention of relying strictly on formal interviews, I soon learned that implementing an informal approach for FGDs was preferred by local residents. For example, farmer participants felt uncomfortable in the FGD when there was a government official present. When taking a less formal approach, the local communities tended to express and discuss their opinions more openly compared to the formal technique. It was also necessary to consider the education level and knowledge of participants. I found that asking simple questions ensured the farmers' comprehension which resulted in thoughtful answers and successful interviews. Thus interviews with local communities needed to be handled in a friendly and informal manner that

respected their knowledge. For example, academic vocabulary beyond the farmers' understanding was avoided to avoid any negative feelings. It was important to be patient in discussing people's opinions and asking for clarification.

It was also useful to leave extra time, one or two days, between each interview appointment to allow for flexibility. Interviews with government officials were often cancelled because they had unexpected meetings. In some cases, although an appointment had been scheduled for up to a week in advance, and despite a phone call to confirm the interview a day prior, some participants were still not available when I arrived. This was both time-consuming and frustrating. In this case, I found it important to be flexible with time for participants who wanted to postpone appointments or had forgotten about the interview. When working with farmers, considering the appropriate times for scheduling interviews during their free time is necessary (as discussed in section 3.2).

Another difficulty in recruiting a research participant from the International Union for Conservation of Nature (IUCN) in Vietnam for interviewing was also related to time, as well as distance. I contacted the representative of IUCN for a telephone conversation. However, he was always unavailable. In the end, he provided some valuable documents and discussed via email.

It is important to note that the FGD participants were recommended by the local authorities and may, therefore, have administrative bias from the government. Since I was not familiar with the residents of Dong Thap and Long An province, I needed assistance with gathering participants for the FGD. If further research were to be done in this area, more time could be put into ensuring a more accurate representation of the local communities in FGDs. Additionally, it would have been ideal to have organized FGDs comprised only of government officials to gain municipal perspectives on water resources management.

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A multi-level qualitative case study approach was applied to explore the key constraining factors in integrated water management and planning in the POR sub-region, a cross-border management unit embedded in a complex multi-level governance system in Vietnam. Data were gathered through in-depth interviews with representatives from research institutions, government agencies, and water service enterprises, as well as through focus group discussions with local community water users. Documents were also analyzed to support and complement the data gathered from interviews and group discussions. After finding common themes using NVivo and manual perusing, an overall interpretation was made about the qualitative data in the context of constraining water management factors in the POR. The next chapter explores the key policies relating to WRM in Vietnam and, in particular, in the POR.

4. Water resource management in Vietnam: Key laws, policies and strategies

In Vietnam, key laws, policies, and political decisions related to water resource management have incorporated the principles of integrated water resource management (IWRM). Participation of stakeholders, collaboration and coordination among actors, and river basin-scale planning are the major principles encompassed by the normative concept of IWRM.

This chapter sets out the results of a review and analysis of key policies, and interviews with government officials and experts engaged in their implementation. The results reflect how IWRM is underpinned by national laws and strategies relating to water, as well as Prime Minister's Decisions at a regional scale. Section 4.1 outlines the national laws that have been developed to operationalize new ideas influenced by the principles of IWRM. Then Section 4.2 describes the key policies governing water resources in the Plain of Reeds (POR), which require the provincial governments to coordinate the management of water resources within the Mekong Delta. Section 4.2 also examines the implementation of existing policies and presents the opinions of key stakeholders regarding these policies and their implementation.

4.1 The evolving legal framework for water resource management in Vietnam

There have been a number of major developments in the legal framework for water management in Vietnam over the last two decades. Many policies and regulations have been issued or renewed, especially after the establishment of the Ministry of Natural Resources and Environment (MORNE) in 2002. MORNE is in charge of environmental management, including water management, at the national level. Two key laws provide the guiding principles for WRM in Vietnam: The Law on Environmental Protection 2014, and the Law on Water Resources 2012. These laws have significant influence over water management strategies in the country, as well as the POR. An analysis of these two laws and their amendments will help to understand the central government's vision in WRM. Key national policy and supplementary regulations and standards related to these policies are also examined below.

4.1.1 The Law on Environmental Protection 2014

As a law regulating and protecting the environment at large, the Law on Environmental Protection 2014 (LEP) aims to protect the water environment and prevent water pollution. Protection of the water environment under the LEP encompasses marine and coastal environmental protection, water, soil and air environments, and environmental protection in production, business, and service activities. To guide the implementation of the LEP, competent government agencies (the National Assembly, the Government, MORNE, and other ministries[5]) have promulgated environmental protection activities, such as environmental protection taxes and environmental standards.

The LEP introduced some major changes in environmental management in Vietnam. It was issued to replace the LEP 2005. Coming into effect on 1 January 2015, the LEP defines management arrangements including management agencies, environmental protection agencies, and administrative agencies at the national and provincial levels (Articles 142 and 143).

The first considerable change appears in the terminology used, where some new definitions related to environmental protection are introduced to strengthen the law. Particularly, Article 3 defines 29 concepts, adding a number of important new legal concepts in environmental

[5] Such as the Ministry of Finance (MOF), Ministry of Agriculture and Rural Development (MARD), Ministry of Health (MOH), and Ministry of Transport (MOT).

protection[6]. These concepts have been modified and supplemented in line with current international practice to provide a better understanding of the country's environmental protection laws. Notably, the definition of *"the environment"* has been modified to reflect that humans are part of the environment and interact with other components of the environment. This is intended to identify and acknowledge human responsibilities for addressing environmental problems.

In another amendment, Article 19 specifies that Environmental Impact Assessment (EIA) must be implemented in the preparation phase of any development project (whereas the LEP 2005 stipulated that an EIA can be prepared simultaneously with the feasibility study report of a project). This new requirement means that a general assessment of a project must be carried out before its implementation. This will include any water infrastructure projects. This aims to limit the negative impacts of projects on natural resources, and holds the project developers responsible for reporting such effects. The new Law also further specifies the conditions triggering an EIA[7].

The LEP devotes Chapter IV to dealing with climate change-related issues. This chapter is one of the main foundations underpinning decisions and resolutions for socio-economic development in the POR, including decisions on coordination among provinces. The LEP requires consideration of the impacts of climate change in strategies and plans, promoting awareness among policymakers of the impacts of climate change. The law defines climate-resilience as "human activities to adapt and mitigate climate change".

The law also supplements the regulations on monitoring and evaluation of water quality and quantity in river basins, especially in cross-border river basins. For example, the law highlights that any project discharging wastewater or contaminants into river basins must consider the loading capacity of the basins. Water users must provide an EIA report which includes a general consideration of discharges, water treatment methods, and the flushing capacity of the river. The LEP outlines regulations for environmental protection at the scale of river basins, which the Provincial People's Committee (PPC) are responsible for implementing. It also highlights

[6] Some of the new and redefined concepts in the LEP include environmental technical regulations, environmental health, environmental industry, pollution control, environmental records, environmental protection planning, and technical infrastructure for environmental protection, climate-resilient, carbon credits, and environmental security.

[7] An EIA is required for: (1) Projects falling under the competence of the National Assembly, the Government or the Prime Minister; (2) Projects in nature conservation zones, national parks, historical-cultural relics, world heritages, biosphere reserves and places of scenic beauty; and (3) Projects that risk badly affecting the environment.

MONRE's responsibilities in safeguarding water quality and quantity, environmental monitoring programs, and assessment of inter-provincial river basins. However, there are no specific rules that set down how the process and partnerships between MONRE and the different provinces should work. In terms of management responsibilities, the law appoints MORNE to be the supervisor of inter-provincial river basins. For river planning within a province, the PPC takes the main role.

4.1.2 The Law on Water Resources 2012

After more than 12 years of implementation, the Law on Water Resources 1998 showed weaknesses and came to be seen as the source of many shortcomings in WRM in Vietnam (Tu, 2011). Consequently, the Law on Water Resources 2012 (LWR) was issued to overcome these inadequacies and to pave the way for activities that aim to efficiently use and protect national water resources in a sustainable way. The law consists of 10 chapters and 79 articles, adding a number of innovations in sustainable WRM on top of its basic provisions for water management. For example, the law declares that water is state property and that the state is responsible for managing and promoting water use efficiency. Therefore, water use occurs under a rationale in which water consumers must pay a fee to the state in order to promote efficient use. This economic rationale aims to encourage water user responsibility and motivates the state to manage and monitor the country's water resources.

The LWR emphasizes an integrated approach to WRM in the country. Article 3 states that water must be managed in an integrative way, considering water quantity and quality, surface water and groundwater, inland and estuarine waters, upstream and downstream waters, in combination with the management of other natural resources. It further reaffirms that the approach to water management must involve partnerships. For example, river basin management should simultaneously work with provincial officers across administrative levels. The LWR specifically recognizes the transboundary nature of water resources and the need to involve multiple jurisdictions and administrative bodies in management activities. As stipulated in this law, when there is a project proposing to transfer water from the river, project developers must consult the PPCs and River Basin Organizations before the preparation phase. Moreover, the LWR promotes the dissemination of knowledge on water resources (Article 5)[8],

[8] All involved sectors across levels shall have to coordinate with media and academic and scientific institutions to provide education on water resources. The Vietnam Fatherland Front Committee shall have to coordinate with the state agencies in propagating and mobilizing the people to take part in the protection of water.

encouraging policy-makers and managers to recognize the communities' roles in protecting water resources, and the importance of residents' participation in water management activities. Under this article, the role of communities as participants in WRM was given more emphasis. However, this is not a binding requirement and community participation remains very limited or non-existent in practice. Another prominent amendment in the LWR is a requirement for public consultation for projects and developments that stand to affect local communities. For example, Article 6 states that activities involving the exploitation and use of water resources, and discharge of wastewater into rivers, require consultation with affected communities. Therefore, project developers have the responsibility to coordinate with local authorities to gather the opinions of local communities who will be affected by the project's activities. In addition, all information related to the project and its possible impacts must be publicly available prior to implementation. This amendment should mean that affected communities are provided with a full understanding of the project, opportunities to become involved, and chances to participate in the decision-making processes.

Requirements for baseline surveys and strategic planning for water resources are also significant additions to the LWR. These critical supplements were formally incorporated in legislation for the first time in Vietnam. A new chapter of the LWR (Chapter II) defines the responsibilities of government agencies in generating information and collecting data on WRM and planning. It defines the direct responsibility of the state and local government agencies for the monitoring of water resources, master planning, and water resources planning. The law further defines the responsibilities for different levels of river planning. For example, inter-provincial river basin water resources planning is the responsibility of MONRE, while provincial governments are in charge of rivers within their territory. Thus, the addition of surveys and strategic planning seems to be holding more government agencies responsible for WRM and planning.

4.1.3 Other national strategies and regulations

In addition to the aforementioned national laws governing water resources, there are other important national strategies and standards that aim to reinforce and strengthen these national laws. They are portrayed in the chart below (Figure 4.1).

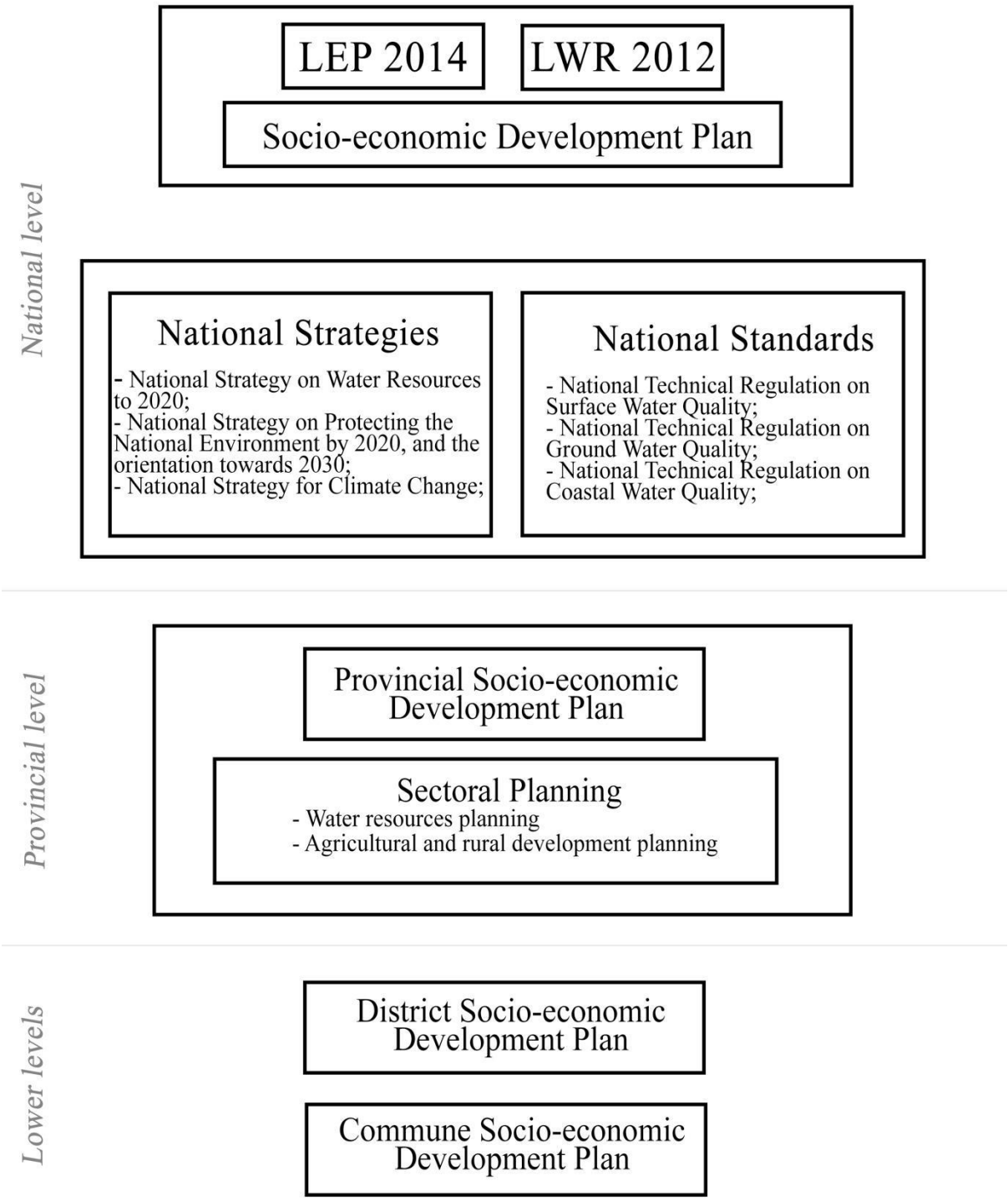

Figure 4.1: Important national strategies, standards and planning processes that have an influence on water resources management and planning, and how they are structured hierarchically
Source: Author (2018)

Water resources management and planning in the POR is guided and influenced by the national policies and laws discussed above. Beneath these laws sit supplemental policies and strategies that give effect to the laws. An important national strategy related to WRM and planning is the National Strategy on Water Resources to 2020, which was developed by MONRE. The strategy established a central role for an integrated approach in WRM in Vietnam. It states that "The management, protection and development of water resources must reflect the integrated nature of river basins, and not be separated solely by administrative boundaries. The natural processes of aquatic and ecological systems must also be integrated…" (MONRE, 2006, p. 12). This is a clear endorsement of IWRM and a call for management at hydrological scales (i.e. river basins), even where these are intersected by administrative borders. However, the Strategy is a non-binding legal document, and can therefore only encourage (but not require) local authorities to put IWRM principles in practice.

According to the strategy, the subdivisions of MONRE at the provincial level (DONRE) shall develop water resources plans in their territories. DONRE is responsible for submitting plans to both the PPC and MONRE. However, because the Strategy is non-binding, the requirement for provinces to make WRM plans or develop river basin planning remains weak. Additionally, there is no requirement to involve non-state actors or the lower levels of government. Therefore, the plans are not reflective of a wide range of stakeholders beyond the provincial government and its priorities.

4.2 Key policies governing water resources in the Plain of Reeds

The laws and national strategies discussed above have been major drivers for water planning in Vietnam, including the POR. They are the foundations for two major policies guiding WRM and climate resilience planning in the POR, namely the Prime Minister's Decision 593 and Resolution 120. While the former relates to sub-regional planning by provinces in the VMD, the latter focuses more on wider regional-scale planning. This section describes these policies and their implementation in practice, placing emphasis on Decision 593 because it was issued a year earlier[9] and some of its activities have already been implemented. The perspectives of key informants on these policies are also presented. These results are mostly drawn from interviews with experts and stakeholders at the provincial level. Actors at more local levels (district and commune), were not typically involved in activities directly in relation to these policies.

[9] Decision No. 593 was issued on 6 April 2016, and Resolution 120 was issued 17 November 2017.

4.2.1 Decision 593: A sub-regional coordination program

a) Background information

The Prime Minister's Decision No. 593/QD-TTg for the "Pilot Association in Socio-Economic Development of the Mekong Delta river region during 2016-2020" was issued on 6 April 2016. The decision aims to fully exploit the potential of the Vietnamese Mekong Delta (VMD) and of each locality in the region, in order to mobilize and efficiently use resources to accelerate socio-economic development. The decision focuses on three interlinked areas for investment:

- Production, processing and consumption of products along the value chain for agricultural commodities including three main products: rice, fruit and fisheries;
- Investment in water management systems including irrigation systems, flood prevention, water use efficiency and environmental measures to cope with the impacts of climate change and promote the development of agriculture in the region; and
- Building and upgrading of transport infrastructure and navigation systems.

According to this decision, the 12 provinces in the VMD and Can Tho City were divided into three sub-regional groups based on agro-ecological zones[10]. These identified sub-regions are the Plain of Reeds (POR), the Long Xuyen Quadrangle, and the Peninsula area. A province from each sub-regional group was assigned to take the lead in coordinating the initiative in their respective sub-region. The lead province for the POR sub-region is Dong Thap Province. The decision also assigned the Ministry of Planning and Investment (MPI) responsibility for the overall coordination of all ministries and government bodies involved in the implementation of the decision[11]. These ministries and the PPCs in the VMD must cooperate to implement the decision. They have to produce annual reports, preliminary reviews after two years, and five-year review reports regarding the implementation of the decision.

Together with ongoing development and industrialization, the decision is likely to be one of the main forces shaping forthcoming plans, infrastructure development, rules and regulations in the POR sub-region and the wider VMD. For the first time, the POR is designated as a

[10] Decision 593 does not create or divide sub-regions, but it requires a sub-regional planning approach. The three sub-regional groups were established based on the agreement of the 12 provinces.
[11] Other ministries involved include the Ministry of Finance (MOF), the Ministry of Transport (MOT), the Ministry of Industry and Trade (MOIT), the Ministry of Science and Technology (MOST), MONRE and MARD.

management unit. According to key informants, this initiative is expected to facilitate better water governance by treating the POR as one unit, which should overcome some of the fragmentation in the planning and management of resources.

Eight months after Decision 593 was delivered, the Prime Minister issued Decision No. 2220/QD-TTg (17/11/2016) to initiate and boost the implementation of Decision 593. In particular, it outlines an action plan for the implementation of Decision 593, specifying seven action plans[12] and thirty-one specific objectives to be implemented during 2016-2020. Decision 593 therefore anticipates many partnerships among different stakeholders in order to achieve the Socio-economic Development Plan goals. The most prominent action plan to note is Action plan 4, for the coordination of climate-resilience, which states that MORNE shall collaborate with other ministries and local governments to develop linkage programs for water resources management and planning for the purposes of flood control, salinity control, and enhancement of the freshwater storage capacity of the area. MORNE shall have primary responsibility for producing a plan for climate change resilience activities.

b) Implementation of Decision 593

The initiative reflected in Decision 593 has shown limitations in the initial implementation phase. Most of the VMD provinces had little to no experience in conducting such an inter-provincial planning exercise. Each province typically developed its own socio-economic planning activities, without the involvement of neighboring authorities. Dong Thap Province, on behalf of the POR, therefore approached IUCN and requested assistance and support in implementing the decision. They sought expert facilitators from IUCN, who could assist them with developing a sub-regional planning process based on a shared sub-regional vision and strategic direction, and elements of an inter-provincial 'Linkage-Program of Activities' (Wyatt, 2017).

To drive action on Decision 593, the Party Secretaries of the three provinces organized a POR workshop in September 2016 to produce a strategy for implementation. The participants were from different stakeholder groups, but most were officials from the POR provinces. They included the Chairmen and Vice-Chairmen of the PPC, Directors and Vice-Directors of

[12] The seven action plans address: coordination of planning, coordination of investment, coordination of production, coordination for climate-resilience, coordination of investment promotion, establishing a regional information system, and developing regulations.

provincial departments, department technical staff, research institutions, and agribusinesses. The workshop included facilitated presentations and discussions, which focused on socio-economic development and climate change adaptation challenges in the sub-region. The workshop outcomes were circulated to participants, and several drafts were then developed with feedback and input from participants before a final draft vision and strategy was submitted to the Office of the Prime Minister and MPI for approval.

The vision and strategic directions addressed in the final draft are highly ambitious. They are outlined below based on a report produced by IUCN (Wyatt, 2017). According to the vision expressed in the report, by 2036 the POR will be considered an economically, socially, and environmentally desirable place to live:

- Economically, income and living standards of the inhabitants of the POR are equal or higher than the national average. The POR provinces will be among the better off provinces of the country.
- Environmentally, in the POR there will be no soil, water, and air pollution exceeding allowable limits. The water from rivers and canals will be potable and suitable for bathing as in the past. The soils in the POR will be replenished by sediments annually and will not become degraded. The POR will become a biosphere reserve, where natural resources are used in a sustainable manner and wetland ecosystems and biodiversity are well conserved. The inhabitants of the POR will be able to live in a clean and green landscape – a mosaic of rice fields and melaleuca forest, the sky full of birds, and water full of fish.
- Socially, the quality of life and life expectancy of people in the POR will be high. Children, women, and elderly are well-nourished. Houses of people in the POR will be neat and orderly permanent structures. Everyone in the POR has good access to quality education and healthcare services and utilities in an equitable manner. Development will be equitable. Everyone will be able to benefit from development. By 2036, there will be no incidence of poverty or unemployment in the entire POR. People will not have to migrate to other places to seek employment due to lack of employment and income locally.

These points are admittedly framed as vision statements, and are thus aspirational. However, it may also be that they are overly ambitious and idealistic, and will therefore be difficult to attain

in the relatively short space of time before 2036. The report also gives little consideration to which actors or agencies will be responsible for implementing the strategy and monitoring progress.

The document does, however identify five strategic directions, which imply some more tangible scenarios. The strategic directions identified are: (1) Restructuring agriculture towards clean and organic agriculture; (2) development of the value chain to support organic agriculture; (3) development of ecotourism to create income while conserving the ecosystem and natural resources; (4) development of infrastructure for transportation: and (5) spatial planning for climate resilience in the POR. Together these aim to foster the socio-economic development of the POR, while the flood storage function of the region will also be gradually restored to help regulate salinization in the coastal provinces during the dry season, and to provide habitat for the restoration of capture fisheries, wetland biodiversity, and ecotourism in the flood season. In addition, the strategy envisages an approach to spatial planning that considers the entire POR in land use and infrastructure decisions, in order to avoid conflict and negative impacts, while cooperating for the common development of the POR.

The Prime Minister's approval of the visions and strategic directions meant that the POR provinces were required to produce a detailed inter-provincial linkage program of activities. This time, they approached Can Tho University (CTU) for assistance. After nearly a year of preparation and discussion, the POR provinces and CTU identified five linkage programs to promote local values and wetland ecosystems. These are focused on:

- Developing the value chains and brands of agricultural production;
- Connecting ecological preservation zones for tourism development;
- Preserving and enhancing the biodiversity of the POR;
- Investing in and developing infrastructure; and
- Formulating policies to encourage investment.

These linkage programs indicate an intention among POR provinces to coordinate and collaborate in many initiatives for more comprehensive development of the sub-region. Among these, biodiversity preservation and enhancement is notably promoted to manage the freshwater resources of the POR. The program aims to increase water retention in upstream provinces to preserve wetland areas and to help adapt to saltwater intrusion. These programs

aim to diversify water usage as an attempt to preserve water resources throughout the VMD.

c) Key informants' perspectives on Decision 593

Interviewees were asked for their perspectives on the idea of Decision 593, particularly in relation to implications for WRM. Generally, officials asserted that the sharing of information and joint planning and management would create significant positive changes in natural resources management, including water resource management. As stated by one provincial official, *"If you want to go fast, you go alone by yourself. If you want to go far, you go together with others"* [P1]. With *"go far"*, the official was referring to more efficient and effective long-term water usage. Respondents from the provincial level and experts believe that the cooperation and coordination of the POR provinces will not only help each province to maximize its strengths and potential in terms of its unique products and ecosystems, but also create opportunities for improving infrastructure and strengthening management resources.

An official from Long An Province provided his opinion on the cooperation of the three POR provinces:

> *Long An Province and the others must work together to promote more sustainability in using resources. This is especially so for water because we share the same rivers of water. So, in some cases, the use of water resources in this province will have a certain impact on the remaining provinces. Therefore, coordinated planning is necessary. Specifically, in Tam Nong, if people raise shrimp or increase the production of pangasius [catfish], the water quality will change and affect the water source in Long An in general, and especially the fisheries in Long An* [P1].

Thus, this official endorses Decision 593, highlighting the need for provinces in the VMD to cooperate in managing water resources across different agricultural sectors. It seems that local officials are hoping improved infrastructure and increased communication among local stakeholders may aid the development of the area and boost the implementation of WRM.

Despite the potential benefits of a coordinated approach to agricultural development in the POR, which may promote common opportunities and strengths, this will require a mechanism for linkage and coordination across the respective provinces that is seen as fair. This constraint

was acknowledged by government officials of both provinces, as well as researchers.

> *Together they [the POR provinces] can overcome weaknesses and challenges such as increasingly scarce resources and inefficient land use, climate change impacts, increasing water use in upstream countries, lacking connectedness in using water resources. However, this will not be an easy task because building a fair mechanism for linkage for the members [provinces] is extremely hard and we do not have the experience to do so* [E2].

Other provincial officials and experts agreed that collaboration would be difficult to implement because of the lack of knowledge they have in developing and managing large scale systems capable of monitoring water resources in the VMD. Additional concerns were raised regarding the different targets each province pursued. Since each province profits off different agricultural sectors, each province would pursue different goals specific to their context. For example, Dong Thap province focuses on rice farming, which requires building dike systems to prevent flood water intrusion. This can limit flood waters in the surrounding areas of Dong Thap, decreasing water flow into the coastal province of Long An during the dry season, and creating a salty environment unsuitable for agriculture. The interruption of natural water flow for economic gain in Dong Thap, therefore, has an economic impact in Long An province. Hence, officials and experts state that it would be hard for the POR provinces to agree on a common linkage mechanism.

In addition to improving agricultural cooperation among the provinces, participants agreed that another benefit of Decision 593 is in preserving the biodiversity in the upper areas of the POR for ecotourism development [P2, E1, E2]. Initially, ecotourism development was promoted in the 2016 POR sub-regional planning workshop, on the basis of connecting important ecological zones in the sub-region. After several meetings, officials from HCMC and the POR provinces developed and agreed on the idea of a *"One journey – Three destinations"* tour to introduce and showcase the unique products and ecosystems of the three provinces to visitors (Figure 4.2). For example, tourists can visit a floating village and the Dong Thap Muoi Research and Conservation Centre in Long An Province, the National Archaeological Historical Site and Tram Chim National Park[13] (Figure 4.3) in Dong Thap Province, and the Dong Thap Muoi

[13] The 2000th Ramsar-registered wetland area of the world, and the 4th in Vietnam. This vast wetland area covers a total area of 7,588 hectares.

Ecological Reserve and Truc Lam Chanh Giac Monastery in Tien Giang Province. It is hoped that such ecological partnerships help to preserve the water resources and uses in each of the provinces, ensuring that the original landscape of the provinces is not exploited and negatively impacting the surrounding areas. These issues regarding ecological cooperation are addressed in Decision 593.

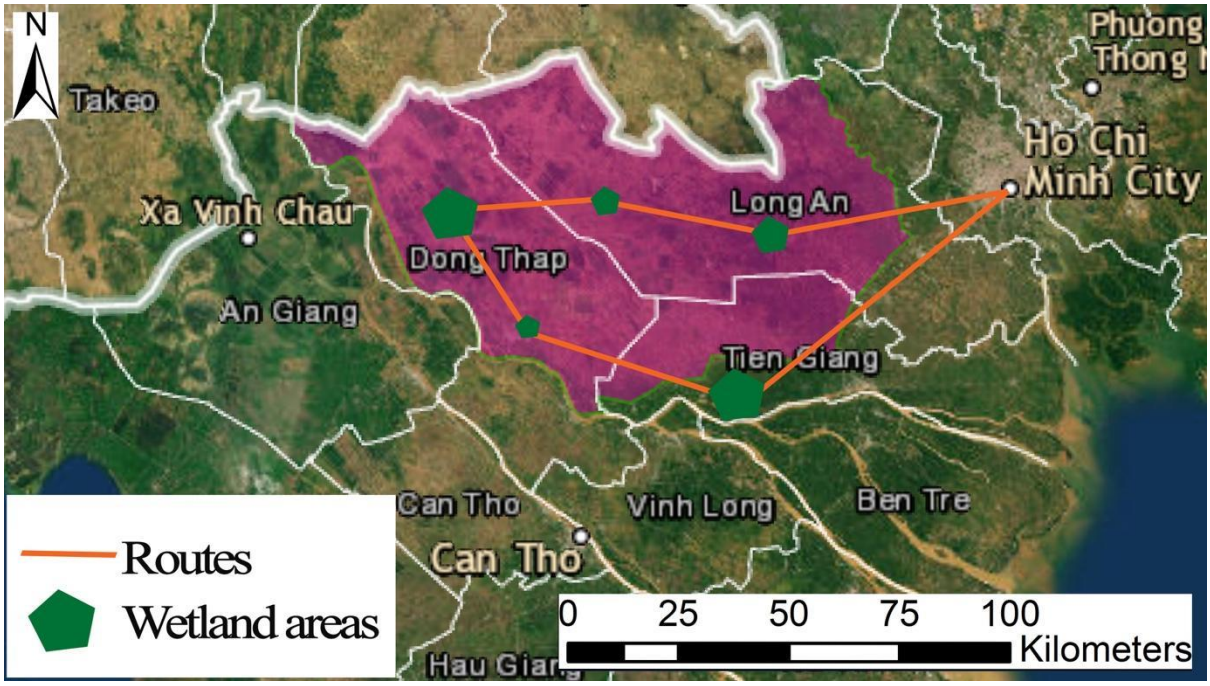

Figure 4.2: Proposed ecotourism route - biodiversity-friendly land use corridor in Dong Thap Muoi sub-region
Source: Adapted from Wyatt (2017)

Figure 4.3: Tram Chim National Park
Source: Author (2018)

Figure 4.4: A lotus field in Dong Thap Province, which was converted into an ecotourism destination
Source: Author (2018)

The impetus for IWRM under Decision 593 might not only help to preserve and enhance the biodiversity values of the POR, but it could also create extra sources of income for local communities through ecotourism services (Figure 4.4). The officials interviewed further emphasized that the flood retention capacity of the upper areas would increase as a result of the preservation of wetland areas for tourism development, creating extra income from tourism activities. This point was supported by one interviewee, who observed, "*It has been found that lotus plantations have [led to] better water retention and better water quality, since lotus [plants] also have water filtering capabilities, compared to paddy fields"* [E2]. Growing lotus plantations can increase flood retention due to its need for water in its life cycle, while rice farming excludes water during certain periods in a year. The increased flood storage capacity, in turn, can help the coastal areas of Long An and Tien Giang Province to better adapt to saltwater intrusion (see also Ni et al. 2016). Both of these provinces have experienced challenges attributed to the loss of flood retention in upper areas (Ni et al., 2016; Tuan et al., 2007; Wyatt, 2017). Ni et al., (2016) illustrated that the annual profit of triple rice is only 37.8

million Vietnam Dong[14] per hectare, while the profit of lotus-fish and lotus-ecotourism is 130 and 292 million Vietnam Dong per hectare, respectively. Additionally, the flood retention capacity of a triple rice model is only 700 cubic meters per 1,000 square meters. Within the same area unit, the alternative production systems (e.g. lotus-fish and lotus-ecotourism) can store approximately 1,500 cubic meters of flood water. The lotus-fish and lotus-ecotourism models are also models that plan with other provinces in mind, and have great potential in mitigating saltwater intrusion in lower areas by increasing water retention capacity.

4.2.2 Resolution 120: A regional master plan

It is increasingly observed that the VMD faces major interrelated environmental challenges arising due to climate change and rising sea levels, the exploitation of water resources by upstream riparian countries, and local environmental impacts of socio-economic development in the region (e.g. CGIAR, 2016; Tuan et al., 2007). Additionally, the implementation of Decision 593 has been delayed, and seems likely to be ineffective because of weak connections among provinces in the region and HCMC. In response, the Prime Minister assigned MONRE to coordinate with other ministries, sectors and agencies to address the sustainable development of the VMD.

MORNE ran a conference on Sustainable and Climate-resilient Development for the Vietnamese Mekong Delta in Can Tho City (26-27 September 2017). The conference attracted the participation of government leaders, officials, and academics, as well as representatives from development partners including delegates from Japan, the Netherlands, Germany, Australia and Sweden. Representatives of international organizations, including the United Nations Development Programme (UNDP), the Mekong River Commission, the Asian Development Bank (ADB) and the World Bank (WB) Country Directors also participated in the conference. Participants identified a need to develop better infrastructure in the Mekong Delta to support socio-economic development and to evaluate the impacts of climate change in designing planning schemes. International partners committed to cooperating closely with Vietnam to address the current challenges in the VMD. Furthermore, the ADB representative underlined that they are committed to offering credit to finance projects in the region (Government Office, 2017).

Based on the outcomes of this conference, the Government issued Resolution No. 120/NQ-CP

[14] One US Dollar is approximately equal to 23,000 Vietnam Dong

on the "Sustainable and Climate-Resilient Development of the Mekong Delta", on 17 November 2017 to mobilize resources and promote the engagement of different actors for sustainable development of the VMD. Resolution 120 focuses on integrating climate change impacts into planning, strategies and policies, and emphasizes the importance of promoting cooperation and development among the provinces. It further highlights the value of water resources as a core element and a basis for formulating strategies, policies and master plans on regional development, which requires integrated management in the entire basin.

Resolution 120 identifies five main strategies for the sustainable development of the Delta: (1) establishing the ecological sub-regions in the delta according to the characteristics of natural ecosystems and the specific conditions of each sub-region (e.g. flooded delta areas and freshwater, brackish water and saltwater eco-zones, etc.); (2) formulating an overall master plan on sustainable and climate-resilient development for the Mekong River delta; (3) restructuring the agricultural economy; (4) completing the mechanism on coordination for developing the region and ecological sub-regions; and (5) developing investment promotion policies and mechanisms. These strategies are specifically intended to support the implementation of Decision 593.

Notable about Resolution 120 is the dual priority placed on climate-resilience and socio-economic development in the delta. In relation to the climate-resilient development strategy, the existing motto of "living together with floods" was adjusted to "actively living together with floods, inundation, and brackish water and saltwater." This shift reflects that policy-makers are no longer looking at "inundation, brackish water and salt water" as enemies that planners should avoid, but more as natural-based phenomena to be addressed with adaptive planning. Therefore, planners should consider adaptation to "inundation, brackish water and saltwater" in their development plans. The new motto will be integrated into a new master plan on WRM in river basins, and will guide adaptation to climate change.

> *The strategy now is to prevent floods, but we actually need to keep the flood. [In places] where we cannot grow rice because of floods, we should grow something else that can adapt to the flood and follow natural-based agriculture. Simultaneously, we should stop building dikes. With areas that have already built dike systems, there must be 8-crops of rice within a 3-year period [rather than 9-crops in a 3-year period][15]. In areas that have no dike systems, we*

[15] In areas under construction of flood control projects such as ring-dikes, farmers can grow triple crops of rice annually. However, this intensive farming has shown disadvantages such as land degradation, and water

should not build any, but encourage [a temporary] Dike[16] built in August to protect [and prolong] the Summer-Autumn crop [for growth and harvesting [E2].

The socio-economic development focus of Resolution 120 shows that the State has recognized issues of intensive rice cultivation. In the past, the State decided to increase from double-crops to triple-crops per year. MARD initially assigned the target of producing three crops of rice annually, but that is no longer encouraged. The government's shift in emphasis shows that the focal point in agricultural development is no longer the *"rice first"* policy. Particularly, in its third strategy, the Resolution promotes re-orientation of the agricultural sector, focusing on the three major sub-sectors of fisheries, fruit trees and rice, in that order. Significantly, rice is ranked as a third priority after fisheries and fruit trees. This is because rice farming consumes so much water, and rice farmers receive only marginal profits. This is a new development, as the *"rice first"* policy has always entirely dominated over other sectors. Resolution 120, therefore, indicates that the interest of the central government is no longer primarily on rice, but on other products that have more flexibility and adaptability in a changing climate and given upstream development. Resolution 120 changes the focus of WRM from rice to more flexible agricultural methods. By not focusing on rice farming, dike systems become less important, and water can be used in a more efficient way.

When asked about the implementation of Resolution 120, respondents from the provincial level authorities, who had participated in the consultation workshop on the overall program of action for its implementation, believed that the project was the most significant program in the VMD. However, implementation has been delayed due to the lack of a coordinating mechanism and competing priorities from different provinces. One official emphasized that the program is a great idea in terms of sustainable development, but there will be a lot of challenges in practice. He shared:

The consultation workshop was just recently held late last month [April 2018]. There were different opinions and ideas from the leaders of the provinces in the delta and Can Tho City. At the workshop, different provinces proposed different

pollution due to stagnant water and fertilizers. Scientists recommend to allow floods to replenish the fields with nutrients.

[16] August dikes are temporary dike systems that were developed by farmers. At the start of the flood season in July and August. The August dike aims to delay the entry of flood water into the fields to allow the end of growing season for harvesting. By doing this, farmers can grow two crops per year.

> *priorities and actions, and those ideas were not unified. However, their ideas have been collected for further decisions. In general, there is no clear mechanism to decide which [provinces] will work on what, and which [provinces] will take the lead* [P1].

***

In summary, this chapter has provided details on the key policies, laws and national strategies affecting contemporary water management in the POR. These include the Law on Water Resources 2012, the Law on Environmental Protection 2014, the National Strategy on Water Resources to 2020, the Prime Minister's Decision 593 and Resolution 120. These policies intentionally promote a collaborative approach and the coordination of different administrative jurisdictions in the Vietnamese Mekong Delta. However, the national strategies are the only executive orders from the central government and as such their recommendations are not legally binding. Therefore, the implementation of IWRM principles remains weak on the ground. In contrast, Decision 593 and Resolution 120 are binding documents. Its implementation still shows some challenges.

Particularly, the implementation of Decision 593 and Resolution 120 is constrained by the limitations of local governments, which have limited experience in developing inter-provincial plans or programs. Decision 593 and Resolution 120 imply that a more integrated approach in water management will provide a better sub-regional water management plan for the POR. Furthermore, the promotion of collaboration between provinces has attracted a lot of attention from different stakeholders. This was mentioned by local government officials and experts interviewed in the region. However, implementation has been facing challenges at its initial stages. This is mainly because the provinces do not have experience in cooperating with each other, and building a mechanism for fair involvement and distribution of responsibilities among provincial members has not been easy. This requires a lot of assistance and support from other stakeholders in order to develop an integrated sub-regional planning process for socio-economic development, including water management.

While the idea of coordinated and integrated management of water across provincial boundaries is clearly expressed in national-level laws, strategies and decisions, there are both benefits and challenges for POR provinces to come together and agree on a linkage mechanism to carry out cooperative water resource management. The following chapter examines key stakeholders involved in WRM in the POR, as well as their roles and interactions.

5. Key actors engaged in water resource management in the Plain of Reeds

The 6th National Congress of the Communist Party of Vietnam issued the slogan *"The Party's leadership, the State's governance and the people's ownership",* as a reflection of the division of power in Vietnam. The slogan clearly identifies the Communist Party of Vietnam (CPV) and the state government as the main decision-makers in governing Vietnam. Indeed, CPV is the major policy driving force. It sets out the vision and principles for the development of the country, while the State ensures implementation of the party line and general management. However, there are no State-issued mandates or provisions requiring or enabling provinces to cooperate to address cross-border issues.

Within this political structure, provincial governments and their agencies play a major role in WRM and planning. Despite the relatively clear designation of political power in Vietnam, some space is gradually opening up for the involvement of other players, including Non-Government Organizations (NGOs), development partners, research institutions, and enterprises. In this chapter, the main groups influencing or participating in water management in the POR are divided into five main categories, as follows:

- The Communist Party of Vietnam;
- Local governments;
- Development partners;
- Universities and research institutes;
- Water service enterprises.

The provincial governments and the branches of the CPV in Dong Thap, Long An and Tien Giang Province play the primary role in decision-making regarding WRM in the POR. Some key research institutes and development partners assist in planning and management, such as the Mekong Delta Development Research Institute (MDI). Development partners, including donor countries and NGOs, provide some financial support and advocate for particular management goals in the planning process. Moreover, NGOs have an essential role in assisting the government in planning and promoting social development at the community level through their projects on the ground. Water service enterprises are involved in implementation activities, such as water infrastructure provision and delivery services. The following sections detail the roles of each of the five key actors in WRM in the sub-region, as identified above.

5.1 The Communist Party of Vietnam

The most influential political actor in Vietnam, and therefore one of the key actors in WRM in the POR is the Communist Party of Vietnam (CPV). The CPV holds ultimate political power because of the socialist one-party structure. It influences water management through Party Committees and mass organizations[17] at all levels. The Party issues guidelines for all national-level policies and strategies. Its decisions are described as "inseparable from the different State agencies" (Waibel, 2010, p. 4) because almost all decisions are made in consideration of the Party framework. These decisions are then formally approved by the state agents, who usually hold Party positions.

The leadership role of the Party is outlined in Vietnam's 2013 Constitution (Article 4) and is expressed through its right to decide, inspect, and supervise the implementation of political guidelines. The CPV can, therefore, influence all fields of policy in Vietnam, including water management policy.

The idea of bringing "the party-state into every home" (as stated by Koh, cited in Waibel, 2010, p. 10), has resulted in a dense network of the party in Vietnam[18]. This broadens the influence and reaches of the Party in all aspects of policy and governance. Party members are present in all official organizations, including state-owned enterprises. The Party is organized across levels in parallel with the state administrative structure (i.e. national, provincial/city, district/town, and commune/ward levels). Party Committees are organized at the national, provincial, district and commune levels, while Party Cells/Chapters, smaller scale Party Committees, are established in wards (in the urban areas), hamlets, and state-owned enterprises. For example, administrative units such as Dong Thap Province, Tam Nong District and Phu Thanh B Commune all have their own Party Committees (Figure 5.1). The influence of these committees is apparent in all important decisions regarding socioeconomic development and management at all levels and across sectors (Waibel, 2010).

When asked about the role of the Party in water management, all of the officials interviewed, across both provinces, agreed that the Party plays a fundamental role in the water sector. As one official observed: *"the Party manages the staff, along with promoting the responsibility of the organizations and heads of organizations"* [D2]. A district official even asserted the slogan

[17] Mass organizations, also known as political organizations, were established by the CPV to help mobilize the masses to participate in and support the Party's policies.
[18] As stipulated in Chapter IX of the Charter of the Communist Party of Vietnam, 2011 "Party leads the Fatherland Front and socio-political organizations by political platform, strategy, and policy; by ideology, organization, cadres and inspecting and supervising implementation".

"The Party's leadership, the State's governance and the people's ownership" [D1], and emphasized that the Party leads the country in all socio-economic development strategies. One of the officials further shared his opinion on the role of the Party in water management:

> *[Water resource management and planning] definitely follows the visions and strategies of our Party, under the leadership and management of the government. Under the political arrangements, there are a number of unions and associations working at all levels to support and monitor implementation. Similarly, under government management, there are also many agencies and institutions to consult the government at all levels [P1]*.

According to these perspectives, the two major actors leading water resource management and planning in Vietnam are the Party and the state government. The following chart (Figure 5.1) portrays the organizational structure of the CPV at the local levels (province, district and commune levels):

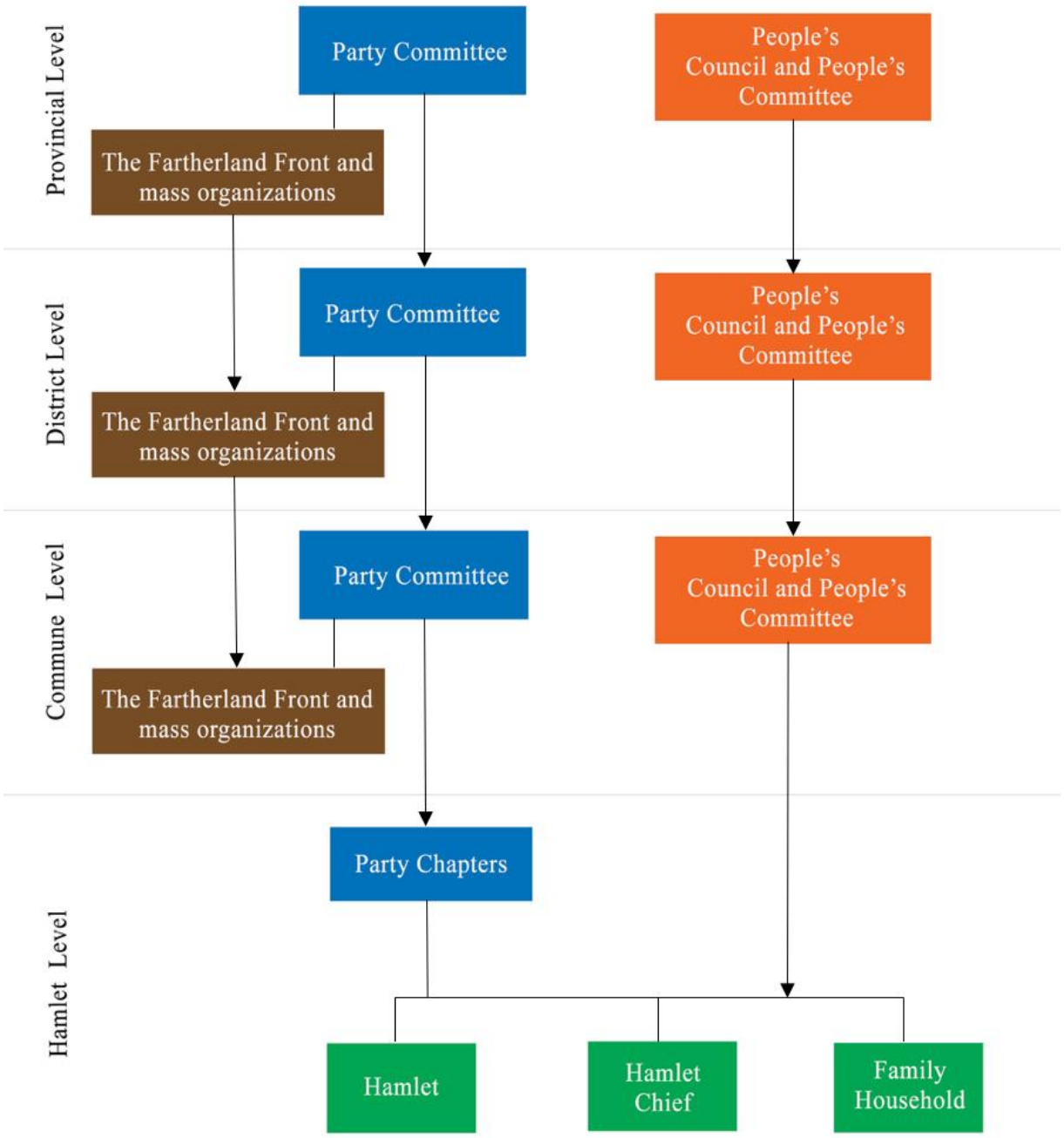

Figure 5.1: Political system at the Provincial, District and Commune levels in Vietnam
Source: Adapted from Waibel (2010, p. 11)

In relation to State power, the Party holds the political power and implements the decisions of the State through its ideological activities and staff management (Waibel, 2010; Yang et al., 2016). While the political power of the ruling Party and the power of the State differ, they are also closely related. Specifically, leaders and heads of all state entities must be members of the Party, and have been trained in advanced political theory. For instance, in most cases, key policy decisions are made by Party members because most of the government leaders are high-ranked party members[19]. Where the State government has a group of professional agencies to provide governing support, the Party has the Vietnam Fatherland Front and mass organizations[20] to help perform political tasks. Even though the state establishes and subsidizes the mass organizations through its budget, "they are not formal administrative subdivisions and agencies of the government" (Waibel, 2010, p. 11). The Vietnam Fatherland Front is one of the political-social organizations that are closely linked to the party. In addition, there are five groups of unions: Women's Unions, Farmers' Unions, Ho Chi Minh Communist Youth Unions, Trade Unions, and Veterans' Unions. These groups were mainly established by the CPV before the August Revolution (1945), in order to mobilize the public to support and participate in the national independence movement in Vietnam. After independence, these organizations became an extension of the Party.

According to interviews with government officials, the mass organizations and political-social organizations are instrumental in overseeing the administration of the state. They actively disseminate information and support the government in the implementation of its programs and activities. For example, Resolution 120 encouraged the People's Councils, the Vietnam Fatherland Front and mass organizations at all levels to step up the supervision and propagation of activities during the implementation of the Resolution. The vice-chairman of one commune stated:

> *They [the political-social and mass organizations] are very active in transferring and disseminating the information and action programs of the upper levels to villagers. This is especially true of the Women's Union and the Youth Union, who are the active ones in activities aiming at awareness raising*

[19] Following Article 41 of the Charter of the Communist Party of Vietnam, 2011 "the Party introduces qualified officers to run for election or appointment to state agencies, the Fatherland Front and socio-political organizations".

[20] The mass organizations cover twenty-eight associations nationwide, encompassing two main groups: the umbrella organizations (e.g. Vietnam Union of Science and Technology Associations, Vietnam Union of Friendship Organizations) and the socio-political and professional organizations (e.g. Vietnamese Students' Association, Vietnam Association for Promoting Education). These organizations work in accordance with Decree No. 45/2010/ND-CP.

regarding the impacts of floods and poor water quality on people. Moreover, the Farmer's Union in the commune plays an active role in solving conflicts over water [C1].

Among these organizations, the Farmer's Union and the Women's Union are usually involved in water-related issues. Donors or NGOs often partner with these unions in various development projects. For instance, the Centre for Water Resources Conservation and Development (WARECOD) and the Green Innovation and Development Centre (GreenID), are two local NGOs working on water protection in Vietnam. These NGOs usually approach the Women's Union at the local level to advance their water protection goals. In An Giang Province, WARECOD worked with the Women's Union and the DiONRE of Phu Tan District to provide information and training on the protection of water resources and the environment. Additionally, GreenID has collaborated with the Women's Union of Ca Mau Province to implement the 'Promoting Sustainable Energy Solutions Project' in Nguyen Phich Commune, U Minh District.

To summarize, WRM in the POR, and in Vietnam generally, is strongly influenced by the CPV and its political-social organizations. Their impacts and influences on the water sector are not only evident in the planning processes, where they provide guidelines and party frameworks, but also in implementation at all levels. However, the Party members interviewed seemed to be unaware of the specific details of the guidelines and party frameworks. Overall, the substantial effect of the Party is due to the political power it has in Vietnam and the dense network of party members at all governance levels.

5.2 Local government

A process of decentralization has happened in Vietnam since 1994 (Waibel, 2010; Yang et al., 2016), through which a clear division was made between the central government and local government (province, district, and commune) levels. The central government still holds ultimate governing power, however, and what authority has been decentralized has been devolved mostly to the provinces. Therefore, despite decentralization, significant governing powers have yet to be extended further to districts and communes. This limitation has been identified in several reports of the World Bank Group. For example, the Joint Donor Report (Garrido et al., 2009; Florde, 2003) found that even though central government granted

additional powers and responsibilities to the local levels, these have remained largely at the provincial level, which can lead to a misalignment of accountabilities, and act as a barrier to regional cooperation (Garrido et al., 2009) and participation at the commune and grassroots levels (Fforde, 2003). Decentralization in Vietnam, therefore, can be seen as a partial decentralization, primarily from the central to the provincial level. This is also true in the POR, and will be further discussed below in light of responses from interviews conducted across all administrative levels of the two provinces.

Each administrative level of the local government has associated People's Councils and People's Committees (Figure 5.2). The People's Councils are the top supervisory bodies at each level, but they govern indirectly through overseeing and supervising the activities of the People's Committees. Meanwhile, the People's Committees at each level and their functional agencies take the lead role in implementing and delivering development in their jurisdictions.

The multi-level government structure in Vietnam is clearly shaped by a vertical and hierarchical structure of authority from the higher to the lower units. By virtue of this structure, the lower units are always under the supervision of, and subordinate to, the higher ones. For example, Commune People's Committees are under the supervision of the District People's Committees, and the District People's Committees are under the supervision of the Provincial People's Committees (PPC). All People's Committees receive instructions and directions from the central government. Within each People's Committee is a group responsible for consultation with authorities and agencies at the respective level. For example, provincial level agencies are responsible for consulting the PPCs in the implementation of laws and regulations. Meanwhile, provincial government agencies have a reciprocal role in advising and assisting the PPCs in performing the function of state management in their respective localities. Each People's Committee at each level has its functional agencies, which take the form of departments, divisions and sections at the provincial, district and commune levels, respectively (Figure 5.2).

In WRM, the two key government agencies are the Ministry of Natural Resources and the Environment (MONRE) and the Ministry of Agriculture and Rural Development (MARD). While MONRE is responsible for the health of water bodies and groundwater (i.e. quality and quantity of water), MARD has the duty to develop water infrastructure for irrigation and other purposes such as flood management and protection. This creates conflicts over the division of powers among sectors. For instance, a water project involving irrigation development is directed by MARD, which will create infrastructure such as dike systems. However, issues can

arise if MONRE opposes the planned dike systems for environmental reasons. In this way, disputes frequently arise among organizations over the power to manage the water body.

At the provincial level, water resources are under the remit of the Department of Natural Resources and the Environment (DONRE) and the Department of Agriculture and Rural Development (DARD), within the PCC. Below the provincial level, these agencies exist at the District level in the form of the Division of Natural Resources and the Environment (DiONRE) and the Division of Agriculture and Rural Development (DiARD). Responsibilities are further delegated down to the Commune People's Committee. However, there is no specific entity responsible for water management at the commune level. Only one agricultural officer, who is usually responsible for more than three sectors including cultivation, aquaculture, and irrigation, loosely oversees water management at the lowest level.

The following chart (Figure 5.2) illustrates the multi-level organizational structure of the Vietnamese government system from central to local government (national, provincial, district, commune and community) and their supervising agencies, regarding WRM.

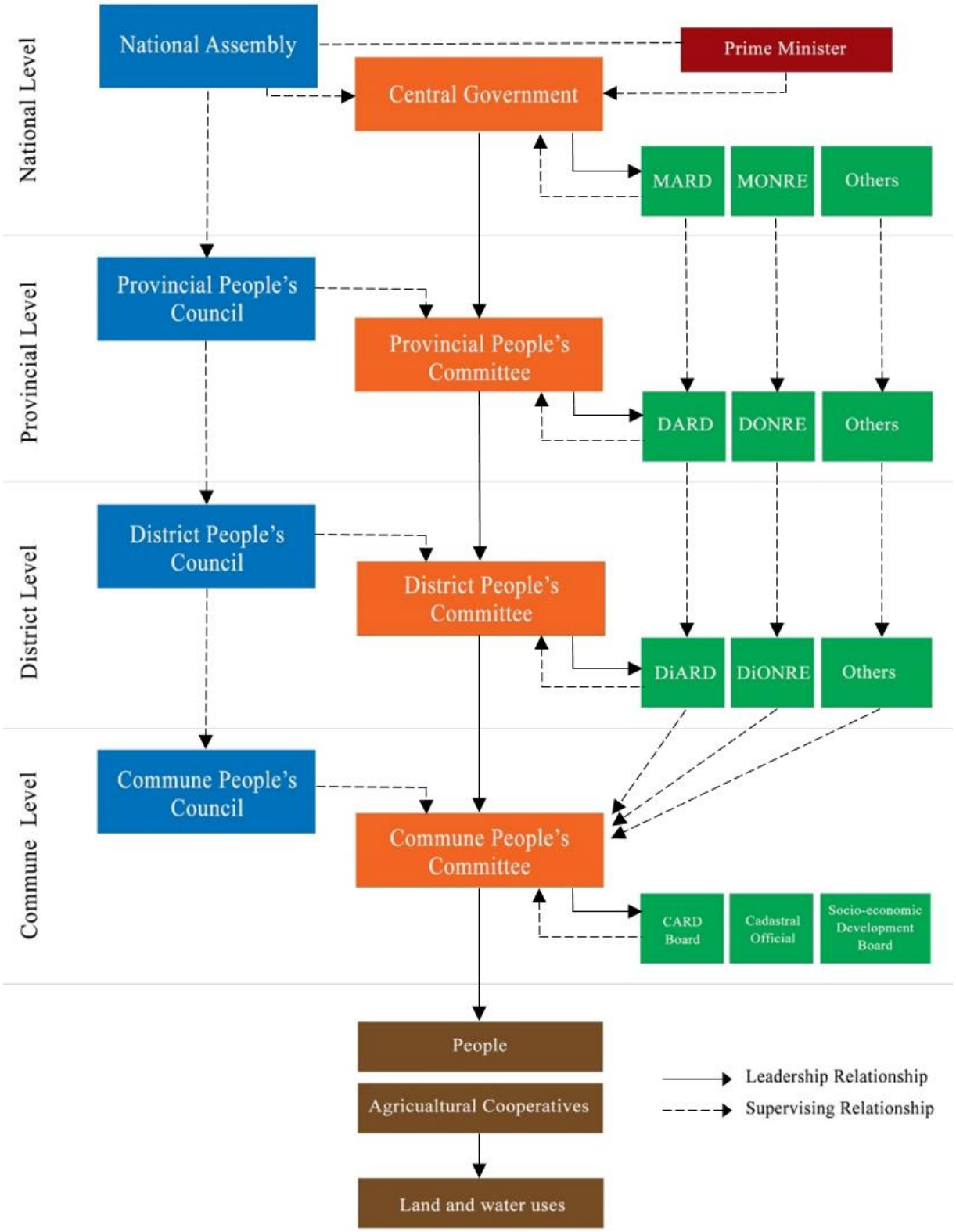

Figure 5.2: The multi-level structure of government at the central and local level and their supervising agencies
Source: Author (2018)

Across the three levels of local government in both Dong Thap and Long An Province, the provincial government was recognized by interviewees as having the most power in decision-making around the development of the province. Provincial governments were frequently cited as the most influential actors in water governance within their provinces, with the power to decide how the province should be developed, and how development activities should be implemented. For example, funding and development projects from the central government and international donors usually arrive initially at the provincial level. After consideration by the PPC, these development resources may then be distributed to the lower levels.

When asked about which actors were influential in water management and planning at the local level, respondents across provinces agreed that the local provincial government played the leading role in this regard [P2, D1, D2, C1, and C2]. One commune official summarized the roles of the three lower government levels as follows: *"The upper level [provincial] shall direct and decide plans and activities. The subordinate [district and commune level] will implement... coordinate according to the directions, guidelines and plans"* [C1]. The participants in the focus group discussions (FGD) agreed that the government has the most power in making decisions, but also clarified that *"The main role and power [in water management and planning] remains at the State and the provincial government"* [D2]. A provincial official also clearly indicated his perspective on the different responsibilities of the three levels of local government, stating that *"They [district and commune level] must assist our projects and follow our directives"* [P2]. A district official agreed with this perspective, stating:

> *The lower levels [district and commune] are there to support and implement the provincial and national directives… We are the implementers, they [the provincial] are the planners… The districts can follow the provincial plan for reference and implementation* [D1].

He further elaborated on the governance hierarchy with an example of proposing and requesting funds for irrigation projects:

> *Commune is the unit to propose specific issues and works at the local level for synthesis. We then [DARD] conduct a survey of the issues and submit to the District People's Committee. The annual budget of 47 billion VND[21] is*

[21] According to the government's Decree No. 35/2015/ND-CP on paddy land protection, the local authority receives the state's annual subsidy for rice cultivation, based on the total area of rice cultivation, at 1,000,000

allocated to the Provincial People's Committee by the central government. At this stage, the PPC decides on when and how much they should distribute the budget to the District People's Committee. Then, the District People's Committee allocates these funds to local level projects [D1].

Another official at the provincial level provided an example of a water supply project to illustrate the provincial government powers in making decisions:

If people want to build a water supply station, they need to know the policy of the PPC. The investors will rely on the provincial targets to recommend the construction of a water supply station. This preliminary proposal is submitted to the PPC for consideration. If necessary, the Committee will advocate for this project. At that time, more detailed proposals shall be developed. After that, a proposal is submitted to the Department of Planning and Investment (DPI). Then, the DPI shall ask for comments from related departments [DONRE, DARD, and DOC[22]]. After receipt of comments from the departments, the DPI shall submit the detailed proposal and opinions of the departments to the PPC. At this time, the PPC will make the final decision [P2].

Both officials explained that WRM at the local level must align with the development goals of the PPC at the national and provincial levels. To ensure that WRM recommendations are consistent with these goals, they must be approved by many officials across the governance hierarchy, and particularly at the provincial level. Moreover, as the implementation processes of Decision 593 and Resolution 120 (as discussed in Chapter 4) illustrated, the provincial government has substantial power to decide who can be involved and at what levels. For example, the Dong Thap People's Committee, on behalf of the POR, approached IUCN and MDI for their professional assistance in developing the visions, strategy directions and plans in the linkage program of the POR sub-region. The final decisions on how the sub-region should be developed, and how resource management should be implemented, however, still

VND/hectare/year. Tam Nong District receives 27 billion VND annually. In addition, there is the irrigation fee of VND 20 billion. There was a law on collecting irrigation fees from water users (The government's Decree No.143/2003/ND-CP). Each district could collect that amount to use for investment in irrigation works. The government dissolved the law in 2014, so they have to provide compensation to the local people to invest in irrigation works for the locality.

[22] DOC: Department of Construction

depend on agreement among the three provincial governments. Indeed, the approval of the central government is also required.

Even though the responses of government officials across levels in the two provinces suggested that the major influence on WRM and planning was the provincial government, the two lower levels (district and commune) also play an indirect role. Interviewees described how officials at these levels identified problems facing particular local areas, and submitted these to management agencies and the PPC [C1, C2, D1, D2 and E1]. A commune official stated:

> *We [the Commune People's Committee] usually hold regular meetings with local people to gather their comments. The results are aggregated to a higher level [district level]. The District People's Committee synthesizes the proposals and submits them to the PPC [C2].*

In summary, of the local levels of government, the provincial authorities have the most power in making decisions regarding WRM and planning more generally in the POR. In particular, they decide which stakeholders are to be involved, and to what extent, in WRM and planning. The two lower levels of governance are indirectly involved, by collecting and synthesizing opinions and issues from local communities. However, the central government has the ultimate authority to approve or deny planning decisions in relation to the sub-region.

5.3 Universities and research institutes

Universities and research institutes also play a role in supporting WRM and planning in the POR. For example, Can Tho University is one of the main research institutes in the country and has contributed to different aspects of water management in the area. The University's Mekong Delta Development Research Institute (MDI) participated in the POR sub-regional planning at its early stages as one of the consultant agencies (as discussed in the previous chapter). Even though MDI does not have a formal planning function, they provide advice into the planning process on the basis of their professional expertise. For instance, MDI contributed professional advice and knowledge to shape the linkage program of activities among the sub-regional planning entities in the POR. Moreover, the institute has also conducted surveys, training, agricultural technology transfer, water-saving programs, and workshops in collaboration with development partners and local government. Their work is carried out at various levels:

> *At the field level, we [MDI] research and promote the use of water for crops more effectively. At the landscape level, we help to manage collective irrigation for greater efficiency. At the sub-regional level, water resources management is related to water use management to ensure the harmony and balance of different purposes of water uses. In the delta, we conduct studies of water use to reduce the contradiction between sub-regions. Besides, the institute also has research related to the water and agricultural sectors in the context of climate change and changes in upstream water use for some adaptive solutions later on [E1].*

Moreover, universities and research institutes are also well acknowledged and trusted by farmers and government officials [D1, D2, and FGD]:

> *[…] people always believe in what they [university] say because they have solutions that are not only to reduce water consumption and waste discharge, but also to increase income and productivity. What the university does is very trustworthy, they study models that help people make more money and reduce the impact on the environment [D2].*

Other national universities and institutes with previous involvement in water management in the POR include the Southern Institute of Water Resources Planning, the Research Institute for Climate Change – Can Tho University, Ho Chi Minh City University for Natural Sciences, and the Southern Horticultural Research Institute. Since 2016, the Southern Institute of Water Resources Planning has been investigating planning solutions for the POR that can help adapt to the negative impacts of climate change. Their work specifically aims to identify ways of using water resources more effectively and sustainably within the whole delta to help cope with climate change impacts. The study is expected to both assess the current state of water resources in the POR, and support decision-making on water storage plans to mitigate saltwater intrusion and distribute water effectively. Other institutes have also been involved in the water sector by submitting their perspectives on planning issues in the sub-region.

Universities and research institutes, and especially MDI, have therefore been active in helping improve WRM and planning in the POR at various levels, despite having no legal mandate. They collaborate closely with other stakeholders, including development partners,

communities, and the government across multiple governance levels. Because of the professional knowledge they contribute, and their high reputation, universities and research institutes are able to have exerted influence on water planning in the POR. For example, they are directly involved in developing methods to improve agricultural productivity while reducing water use through various technologies.

5.4 Development partners

In this study, development partners refer to funding agencies, donors and Non-Government Organizations (NGOs). Similar to the role of universities and institutes, these development partners have provided support to the government across all major sectors – including water management –by facilitating, planning, providing advice and expertise, sharing and disseminating information, lobbying and informing policy-making, and implementing activities and projects on the ground. Moreover, they are also key donors providing financial support to develop and implement plans and to realize infrastructure projects. Some of the well-known international development partners active in WRM in the region are the World Bank (WB), the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the United Nations Children's Fund (UNICEF), and the International Union for Conservation of Nature (IUCN). Some of the projects in which these development partners have been involved are detailed in Table 5.1.

Table 5.1: Role of diverse development partners in the POR

Timeframe	Development Partners	Project aims/details
1995-present	Australian Government; UNICEF	Co-funded multiple projects to develop drinking water treatment systems for schools and communities in the POR.
2014-2016	GIZ; Asian Development and Management Institute (AMDI); Sub-Institute of Hydrometeorology and Climate Change (SIHYMECC)	Collaboration to identify climate change adaptation measures, to reduce the impacts of floods, and to live with and take advantage of floods in the POR.
2016-2022	World Bank Vietnam; Vietnamese government	Implementation of the Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project. Aims to enhance climate-smart planning and climate resilience of land and water management practices in the Mekong Delta. Focused on the upper delta, and realizing benefits of flood retention measures, while increasing rural incomes.
2017-2020	IUCN Vietnam; Coca-Cola; provincial governments in the POR	Collaborative project to use flood-based livelihoods to restore the flood retention ecosystem function of the Mekong Delta. Aims to demonstrate financially attractive, low risk, flood-based livelihoods across large rice-growing areas.

Source: Information compiled from multiple online sources

In general, the influence of international development partners on WRM and planning in the POR has been important. These entities collaborate closely with other stakeholders, such as local governments, communities, universities and research institutes, to influence planning, as well as to implement activities and projects at the local community level.

Major funding agencies usually provide financial support, through loans and grants, for large infrastructure and planning projects. For example, in 2016, the World Bank cooperated with the State Bank of Vietnam on an agreement for loans and credits of 560 million USD to support climate change adaptation strategies in the Mekong Delta. This funding was then distributed to local governments. Funding agencies also provide general support through collaborations with either the central or provincial government.

Meanwhile, NGOs serve the needs of local communities and help to communicate the issues and voices of local people, either directly to the authorities, or indirectly through their reports to funding agencies. By implementing initiatives on the ground and working closely with the local authorities and community, NGOs help to improve livelihoods and address environmental issues in local communities. Different NGOs focus on various issues. For example, the

international organization IUCN is more involved in conservation projects, for example in protecting threatened species and wetlands conservation. Meanwhile, most of the work of the Vietnamese NGO focuses on improving water management, gender equality in access to water, and community capacity building. Since 2012, WARECOD has supported local people in three communes of An Giang and Dong Thap Provinces by gathering and reporting local knowledge and providing training to local research groups. These local groups have later become nucleus members of river monitoring groups for self-managing water and aquatic resources in their areas. Villagers involved in such initiatives have gained knowledge and become more confident to discuss WRM issues with local authorities (Centre for Water Resources Conservation and Development [WARECOD], 2015).

5.5 Water service enterprises

Despite the gradually expanding space for private and state-owned enterprises in Vietnam, the water sector is still dominated by the government. Water service enterprises have very limited influence on the planning and management of water resources in the POR. Their main role is to provide water services such as construction, operation and maintenance of water supply infrastructure, irrigation systems, and dikes.

Private enterprises are diverse in terms of form and size. They exist and operate at the commune and district level. In large cities, the supply of water is mostly provided by state-owned water treatment and sanitation companies. These companies usually operate at the provincial, city and district levels. There are several large water service companies in Long An and Dong Thap Province, such as Long An Water Supply Sewerage Joint Stock Company, Duc Hoa Irrigation Management and Exploitation, Dong Thap Urban Water Supply and Environment Joint Stock Company, and Dong Thap Irrigation Construction Joint Stock Company. The role of the Party in these companies is significant because company directors must be party members. Because most of these companies are state-owned enterprises, the role of the private sector in WRM and planning in the POR remains relatively unimportant.

In rural areas, water enterprises are mainly privately-owned or cooperative water service providers. Clean water projects are identified and developed by the functional agencies of the District People's Committee or Provincial People's Committee (such as the Rural Water Supply and Sanitation Center of DARD). The enterprises are then contracted to build and operate the infrastructure and deliver water services to households (Figure 5.3).

a) *b)*

Figure 5.3: Clean water supplies that have been built by local enterprises
a) Operated by a private household at Phu Thanh B Commune; and b) Operated by a local enterprise at Moc Hoa District.
Source: Author (2018)

In irrigation supply, farmer cooperatives operate in areas where full-dikes[23] are fully covered, such as a ring-dike at Phu Thanh B Commune (Figure 5.4). Irrigation cooperatives operate under the Cooperative Law 2012, which regulates the provision of irrigation services to households in need of water. Cooperatives own and manage the full-dike systems in local irrigation schemes, in which they direct water into smaller canals for community farmers. The Phu Thanh B scheme also includes water pumping stations managed by the cooperative to control the flow of water in and out of the dike zone. According to the law, the cooperative is responsible for the overall management of all irrigation works; however, FGDs reflected that

[23] Dike systems in the delta usually have multiple functions, such as flood prevention and irrigation.

water users have been assigned management responsibilities by the cooperatives. For example, in some cases, water users are expected to look after and protect the in-field irrigation and drainage facilities (Figure 5.5). In this way, the irrigation works are maintained and repaired in time to avoid water wastage.

Figure 5.4: A ring dike[24] at Phu Thanh B Commune to protect rice fields (on the right)
Source: Author (2018)

If the cooperatives do not fulfil their responsibilities, this can lead to crop failure. In such cases, they must pay compensation to farmers for their losses. In case of crop failure due to unexpected events, such as weather-related extremes, the Commune People's Committee will appeal to higher levels of government for support.

[24] A ring dike is an intrusive body that encircles a large area to prevent water intrusion for the purposes of cultivation.

Figure 5.5: In-field irrigation in Phu Thanh B Commune.
Source: Author (2018)

The cooperatives are monitored by the Farmers' Group, a farmer-led initiative, to ensure timely and efficient water supply for irrigation. If there are any problems related to irrigation services, people can directly approach the Farmers' Group to address these. Each Farmers' Group comprises three people[25] representing the water users in the area. Typically, they are locally respected people who have farmland in the area. Because of their experience in land cultivation, these representatives are well-placed to monitor water levels in the fields. These groups mostly work voluntarily, with a relatively low contribution by the members, of around 30 kilograms of rice per hectare per year.

In conclusion, water is seen as a productive resource, and users pay for water usage. The responsibilities of water service enterprises in water supply are relatively well established, and they make a significant contribution locally in delivering water services to households. However, their roles in managing water resources more generally are not clearly defined, and their involvement, in any case, remains relatively low, except in the operation of water supply projects. Private companies and cooperatives sell water and water services directly to households on a contract basis. However, their ownership stake in infrastructure management

[25] These representatives are voted in by all the farmers in the dike.

is relatively low because the local government remains the official authority in the regulation of water infrastructure (supply systems, pumping stations, and concrete canals). The role of private enterprises in decision-making processes on water resources management is also relatively limited.

***

Overall, there are five key types of actors engaging in WRM and planning in the POR. These are the Party Committees, local governments, universities and research institutes, development partners, and water service enterprises, all of which play different roles. Respondents often cited the Party Committees as having the most influence on planning strategies and visions, while local government bodies hold a degree of power in decision making around planning activities at the provincial level. Planning across administrative boundaries involving more than two or more provinces requires approval from the central government. Development partners, universities and research institutes can influence WRM strategies and visions through advising and consulting. The activities of water service enterprises are largely restricted to the installation, operation and maintenance of water projects, and do not extend to participation in wider water planning. The construction of state irrigation works is usually left to state-owned companies. Therefore, the state has much power in WRM and planning, whereas non-state actors play specific roles but have relatively less influence.

The notion of water governance, in the sense of planning and decision-making involving the participation of a wider range of actors and stakeholders, is still emerging and remains unclear in the field of WRM in Vietnam. The State only uses the term ‘water governance’ in international documents, whereas in practice the State understands and implements water ‘management’ as a relatively centralized, top-down and government-controlled process. This chapter examined the roles of key types of governing actors in the POR and found little evidence of clearly-defined roles or responsibilities for actors at the commune level. Their responsibilities for water management in the POR remain unclear. The following chapter identifies major challenges in WRM and planning based on the findings presented in Chapter 4 and 5, as well as additional interview data.

6. Key challenges for integrated water resource management in the Plain of Reeds

Scholars have identified some key challenges in water resource management (WRM) and planning in the Mekong Delta. Many of these stem from the region's intensive agricultural development, the pressures on water flows due to upstream development, and changes in climatic conditions (Nhan et al., 2007; Moder et al., 2012; CGIAR, 2016; Anh, Pittock, & Tuan, 2018). However, current research has not yet investigated the challenges in WRM and planning in the Plain of Reeds (POR). Drawing on key informant interviews and analysis of relevant policy documents, this chapter aims to fill in that gap by highlighting the major challenges found for regionally-integrated WRM and planning in the POR. These are: (1) a lack of transboundary collaboration among states-actors across the study areas; (2) insufficient organizational capacity; (3) a limited awareness and expertise around water resources; (4) a lack of mechanisms for inter-agency information sharing and learning; and (5) investment prioritizes irrigation. The following sections discuss how these five factors constrain integrated water resource management in the POR.

6.1 Lack of transboundary collaboration

Due to the complexity of both vertical (i.e. hierarchical levels) and horizontal (e.g. neighboring administrative bodies) government organizational structures, coordination among government entities in Vietnam is complicated. Many studies have indicated that poor coordination among various governing levels is a major constraint on present and future integration of governance functions and the management of regional-scale natural resources (Ho et al., 2012; Renaud & Kuenzer, 2012; Yang et al., 2016).

Given that POR provinces share the same water resources, and occupy a relatively contiguous eco-region, it is argued that they should adopt a collaborative and integrated approach to managing water resources. Indeed, integrated management at the scale of the sub-region as called for in the national Law on Water Resources (LWR) 2012. Even though the National Strategy on Water Resources and LWR have re-emphasized the importance of partnerships in managing water as a core aspect of integrated water resource management (IWRM), the respective provinces are not collaboratively engaged at the sub-regional scale. This is in part because these national documents are executive orders and are therefore not legally binding on

the provinces. Provincial authorities are therefore not obliged to work together on cross-border environmental issues, and are able to avoid doing so unless it is directly mandated by the central government. This absence of legally binding directives also exists at other levels. For example, a vice-chairman from the commune level stated that *"We only manage our localities, and coordinate according to the directions, guidelines and plans of the district and provincial level. Everything [tasks] needs to be in legal documents"* [C1]. According to this official, the commune level only takes action when it is legally required for them to do so. In these instances, action also usually does not involve cooperation among the communes. Thus, barriers to cross-border or horizontal cooperation exist across the multi-level governance system in Vietnam.

As a result of the aforementioned structural characteristics, the provinces tend to passively wait for commands from the central government in relation to WRM. In the implementation of Decision 593, for example, local governments only cooperate because of a mandate from the Prime Minister. When asked whether there is an integrated approach to WRM in the POR, a government official's perspective was that *"It does not [exist] and it is also unnecessary because each province is its own administrative unit, so each province usually only has its own water plan"* [P1]. This statement reflects how planning and management at local government levels are strictly confined within administrative boundaries, despite the fact that water resource problems usually span administrative boundaries and do not conform to jurisdictions. Even between neighboring districts and localities within a given province, coordination and cooperation usually remain weak. One district-level official observed that *"All districts have a provincial WRM Plan, so they can follow that plan for reference and implementation"* [D1]. He further stated:

> *They [districts] do not directly exchange information with each other, they only indirectly communicate with each other in writing and reports submitted to the Provincial People's Committee… Each district can update the others' information through the synthesized report of the Provincial People's Committee if they want to [D1]*.

Information sharing and cooperation between localities are considered difficult because acknowledging problems – even shared ones – can be politically risky. This was illustrated by a district official at DONRE, who was concerned that *"Sharing information on water pollution*

with the neighboring districts is like showing your back [secrets, violations] to them. This is sensitive and no one wants to do this" [D2].

In addition to weak partnerships among administrative areas, poor collaborations can also be found among government agencies. Despite the efforts of the government to increase coordination between sectoral agencies, the groups remain passive in WRM and have yet to show effective water resources collaborations.

> *The cooperation between departments is loose. It lacks connection because the procedures in Vietnam are complicated and include many steps. Horizontally, there is still a lack of cooperation between sectors. Most projects are often considered inter-sectoral planning, but this occurs mainly through legal documents. The mechanism for sharing information between the sectors is cumbersome, and discussion through legal paperwork often takes time... Although there is a policy of strengthening cooperation between sectors, the cooperation really does not exist in reality and is mainly achieved through formal legislation [P1].*

It appears that the legal documents (which include policies and plans) and processes used for communicating between administrative sectors are inefficient and slow. These legal documents seemed to be the only mechanism used to achieve coordination in WRM, but often times, government agencies ignore the non-binding legal procedures defined therein, hence weakening collaboration among the sectors.

Thus, weak coordination and collaboration among administrative areas and sectors have directly hindered effective WRM and planning in the VMD (Renaud & Kuenzer, 2012), and these partnerships need to be improved if cross-border environmental and resource management issues are to be addressed effectively (CGIAR, 2016). A report published by CGIAR Research Centers in Southeast Asia has identified poor collaboration and information sharing as the major reason for severe drought impact in some coastal provinces lacking effective WRM in the VMD. As reflected above in the comments of interviewees, weak or non-existent ties among administrative areas are not seen as a problem, and this attitude itself obstructs effective cooperative WRM and planning. Another key factor impeding collaboration among localities is a simple fact that there are no mechanisms by which administrative areas can collaborate. A local government entity or sectoral agency cannot order an equivalent

agency in a neighboring jurisdiction to carry out any task. Hence a mechanism enabling cross-border collaboration would be essential for cooperation in WRM at the sub-regional scale. For example, Dong Thap Provincial People's Committee does not have the authority to assign tasks to Long An Provincial People's Committee. DARD does not have the power to command or assign tasks to DONRE: *"We [DONRE] do our tasks, they [DARD] do their tasks. We will work together if there is an assigned task given by the Provincial People's Committee" [P1].* Therefore, officials in the various government agencies do not generally organize meetings to share information, unless instructed to by the Provincial People's Committee. While coordination across vertical levels seems to be better institutionalized, this essentially functions as a top-down 'command-and-control' relationship. Moreover, a provincial government does not have any mandate to develop a cross-border WRM plan or river basin plan. Only MONRE has the mandate under the LWR to develop regional WRM plans, and DORNE only can plan for WRM in provincial river basins.

In addition to the lack of trans-boundary collaboration among administrative areas and government agencies, it was found that local communities are also usually dismissed or ignored in the WRM planning process. Perspectives from water users and the local community are necessary to address local issues and provide for local needs. However, the opinions of villagers are often not considered, and their participation in planning remains very limited. In FGDs at the local level, communities expressed their disappointment with the local government when their aspirations were not considered. Even though the Commune People's Committee organizes an annual meeting with local communities to identify local issues, their voices are not well considered by the government, and the issues they raise are not integrated into planning and practical activities [FGD]. The poor integration of local needs can lead to mismanagement of water infrastructure, including irrigation and domestic water supplies, against the interests of communities.

In general, there is a lack of interaction across levels due to the complexity of both vertical and horizontal dimensions, inadequate mechanisms to allow collaboration, and a lack of legal mandates requiring partnership and cooperation. These factors are not conducive to the principles of IWRM found in the LWR 2012, and constrain WRM and planning in the POR.

6.2 Insufficient organizational capacity

The lack of organizational capacity and human resources for WRM at both national and local levels is one of the main factors limiting the effectiveness of WRM. Shortages in human resources limit the ability of responsible agencies to effectively address water-related issues. According to the Mekong Delta Plan (2013), insufficient capacity and expertise across central and local government entities is one of the biggest challenges in WRM in Vietnam. The situation at provincial and lower levels is worse than at the national level. According to the Mekong Delta Plan (2013), while approximately 35 per cent of the staff of MONRE have Master's (or PhD) degrees, only a little over one per cent of the staff at the local level have a Bachelor's degree or higher. Coordination between levels can, therefore, be problematic in terms of communicating complex issues and implementing management activities. The difference in educational levels can influence WRM implementation as related by one informant:

> *The capacity of the local officials [such as commune and district officials] is limited. Because of poor capacity and short-term vision, their proposals mainly serve for their personal purposes and interests [P1].*

Another provincial-level official attributed the disconnection between levels to the limited capacity and resources of the lower levels:

> *The provincial level directs, but the district level does not care because they do not clearly understand the procedure, so they do not closely follow the projects [in general] … In summary, the coordination between the levels is not very tight due to incompetent cadres and weak local resources. Sometimes employees work in the wrong industry or hold too many positions so they do not manage [projects] well. For example, an agricultural official in the commune is in charge of rice fields, veterinary medicine, animal husbandry, irrigation, etc., so they cannot complete their tasks [P2].*

The Mekong Delta Plan (2013) noted that more than 1,000 students graduate from the Water Resources University annually. However, the curriculum strongly focuses on technical and engineering knowledge, neglecting soft skills such as communications and management. Meanwhile, it is increasingly recognized that WRM requires a broad set of quantitative and

qualitative knowledge, and interdisciplinary perspectives, especially when the law and policy call for an integrated approach at the scale of river basins, deltas or other hydrological or ecological units.

According to MORNE (2015), staff working in the water sector at the local government levels are not sufficiently qualified. There is also a need for additional capacity building activities in the sector in general. At the provincial level, unqualified staff members lack the professional capacity and management skills needed for water projects. Additionally, MORNE (2015) states that the number of cadres and civil servants working in DONRE is limited. This lack of capacity was also illustrated in the implementation of Decision 593 (discussed in Chapter 4), where the provincial governments asked for support from the International Union for Conservation of Nature and Can Tho University. Moreover, the capacity of specialized water resources agencies is also weak because of the lack of human capital. In both Dong Thap and Long An Province, DONRE has to administer and combine water and non-water sector issues into one single department. Therefore, in Dong Thap Province, DONRE operates as a Water and Mineral Resources Sub-department, and in Long An Province it has established a Water, Mineral Resources and Meteorology Sub-department. The lack of human capital constrains these departments, and makes it difficult for them to be effective in capacity building around the various sector issues.

Fieldwork at the district level also indicated that a staffing limitations, in terms of both quantity and capability of staff, is a problem. Staff members usually have to fill multiple roles and carry out concurrent programs of work: *"…Previously, the irrigation team included more than 6 staff [members] but after the staff cutbacks, there were only two people left"* [D1]. For this reason, staff often do not have the necessary expertise in water resources. This has reduced the effectiveness of state management of water resources at the local level and is one of the key challenges in WRM in the POR. This challenge is present to an even greater extent at the commune level, where one interviewee observed: *"They [officials] have to hold many positions. Therefore, they do not pay much attention to water issues, compared with other matters such as land disputes"* [C1]. For example, one of the staff members of Binh Hoa Trung Commune simultaneously holds five positions and is responsible for four separate industries – cultivation, animal husbandry, aquaculture, and irrigation. Moreover, responsibility for environmental and natural resource management has not been decentralized to the commune level. Therefore, WRM does not occur in practice at this level, although staff members work predominantly in the related fields of agriculture and land management.

In general, resourcing, professional capacity, and water-related expertise are scarce among staff at the lower governing levels. Staff at the provincial level are predominantly qualified in technical and engineering disciplines. This is consistent with human resourcing in WRM in Long An and Dong Thap provinces, where environmental management has been mainly oriented towards infrastructure-based solutions, rather than integrative approaches combining natural, social and technical measures. The lack of soft skills results in insufficient human capacity and resources in WRM across levels, which hinders communication and implementation of WRM activities.

6.3 Limited awareness and expertise around water resources

In this study, local community members and government officials from district and commune levels were found to have a generally poor understanding and a limited appreciation of issues related to water resources. One provincial-level official in Long An believed that:

> *The first difficulty is the citizens' awareness of water resources. In their opinions, it [water] is an endless resource so they do not have intentions to save it. Besides, they think that the river can self-cleanse* [P1].

This point was also evident in the FGDs, where participants shared their perspectives on water. Those with limited awareness tended to focus more on personal benefits such as economic profits. Even some district officials had a limited appreciation for the availability of water resources. They stated that *"Water here is plentiful. We can use it comfortably, not like in the mountains or other places"* [D2], and that *"because of abundant water, the concern about water issues is unnecessary"* [D1].

Indeed, misconceptions about water availability have significantly impacted WRM and planning activities in Vietnam, and especially in the POR. According to Ho et al. (2012), limited awareness or poor understanding of environmental problems at the local level is one of the main barriers to increasing participation and collaboration of stakeholders in environmental governance in Vietnam. It has been well understood by environmental managers and researchers that increased awareness of environmental issues promotes a greater appreciation of the environment, and plays an important part in encouraging responsible environmental behaviors (Ho et al., 2012). However, because the inhabitants of the POR have a long history of living with floods, people understandably believe that water is abundant. Focus group

discussants stated that *"water is always there", "water is an abundant and [an] endless resource"*, "*we just pump it from the river",* and *"water can clean itself" [FGD].* Such perspectives have led to irresponsible water use and mismanagement, and have contributed to passive involvement, or lack of involvement, from communities and officials in WRM activities.

6.4 Lack of inter-agency information sharing mechanisms

WRM and planning in the VMD faces problems in terms of an absence of data and poor information sharing between agencies (Renaud & Kuenzer, 2012). Therefore, the development of policies and mechanisms for information sharing is likely to be very important for the region (Tuan & Chinvanno, 2011). This study found that there is no formal mechanism to collect, coordinate, manage, and effectively share data between agencies and provinces in the study area. This contributes to a fragmented planning approach in the region, and increased costs for data collection. Furthermore, it does not support any learning or exchange of management experience across neighboring jurisdictions. Besides, a lack of information sharing could have severe impacts on neighboring administrative areas, *"An increase in water use for aquaculture in the neighboring districts can seriously impact our production in the lower areas by decreasing water availability and producing more pollution"* [D2]. Generally, the provinces insist on autonomy in data collection and management within their own administrative boundaries. For example, to manage water resources and ensure water security under its Socio-economic Development Plan, Long An Province developed the strategy 'Provincial Water Resources Planning to 2025 towards 2035'. Meanwhile, the People's Committee of Dong Thap Province developed the 'Provincial Surface Water Resources Management Plan to 2020 towards 2030'[26] for its own territory. These separate planning processes, however, did not give consideration to each other, but rather created separate WRM entities. This is contrary to the principles of IWRM as reflected in national policy such as the LWR, which clearly advocates cross-border communication and coordination.

It is evident that there are many programs aimed at generating information on environmental and social issues concerning natural resources and environmental management in the VMD.

[26] These plans clearly reflected the aim of local government to protect and improve water for production (mainly agriculture), but neglected other values. For example, the recommendations on infrastructure and technical interventions remain predominant.

But these are led by a range of actors, including Vietnamese and international universities and institutes, government agencies, and NGOs, who do not necessarily always share their information. For example, WISDOM (Water-related Information System for the Sustainable Development of the Mekong Delta) is a bilateral German-Vietnamese project, which involves different research disciplines to promote all major aspects and issues of IWRM in Vietnam (Renaud & Kuenzer, 2012) and in the VMD. Research to emerge from WISDOM is published in international scientific journals, but there is a lack of involvement of local civic organizations in these studies. Local knowledge is rarely mentioned in the studies, even though it plays a crucial role in environmental management (Tibby et al., 2007). WRM research is likely to be further enhanced by the ongoing development of cooperation between Vietnamese research institutes and universities and international donors and institutes. However, government officials, who play a crucial role in decision-making and WRM activities, do not seem to have easy access to this kind of research. Moreover, data regarding WRM and planning is not publicly available, so is difficult for many actors to access. Indeed, government officials tend not to share this information.

6.5 Investment prioritizes irrigation

Shiklomanov (1998) argued that it is important to consider the impacts of human activities in assessing water resources. Understanding current water use and drivers of change, therefore, is important for the development of policies that aim at improving current water management. Vietnam underwent significant changes in water use as a consequence of economic development programs post-Vietnam War, specifically the launch of reforms under *Doi Moi* (Tanaka, 2001). While the policy drove the economic development of Vietnam, it simultaneously influenced water use in the country, including in the POR. This area has rapidly shifted from what was originally a swampy lowland agro-ecological area, into a vast agricultural production region. The State heavily invested in dikes and infrastructure for irrigation purposes in the area. Increases in agricultural production are largely due to increased irrigation and intensified land-use for cultivation. This has driven an increase in water use, and also an overall decline in water quality, as confirmed by some of the interviewees.

In both Long An and Dong Thap provinces, water for agricultural production is applied to diverse uses, but mainly to rice production and cultivation of vegetables and fruits. These agricultural sectors make up a high proportion of total agricultural land use in the area (Figure

6.1) – 80-82% in Long An and Dong Thap. This amount represents a large portion of water allocated for land irrigation.

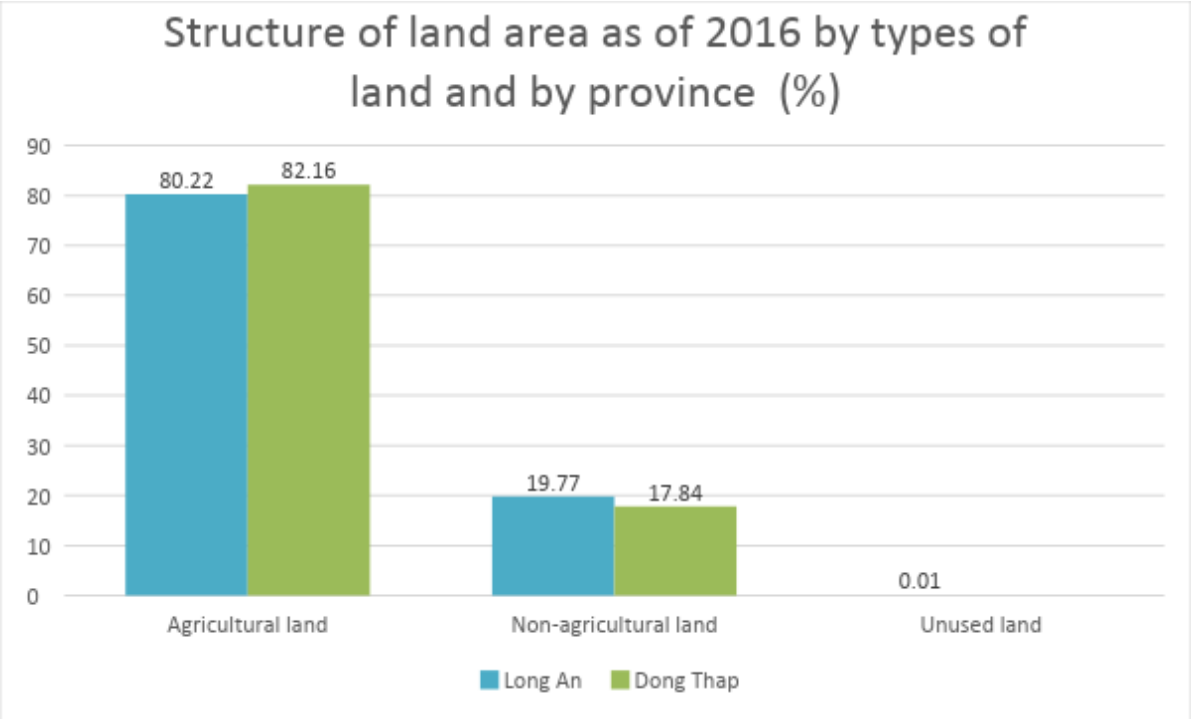

Figure 6.1: The percentage of land under agricultural and non-agricultural use in 2016 in Long An and Dong Thap provinces
Source: Adapted from Dong Thap Statistical Office (2017) and Long An Statistical Office (2017)

In the period 1995-2016, planted areas of rice paddies increased in both provinces (as shown in Figure 6.2). In Dong Thap, the planted area of rice rose from 360,000 to 551,351 hectares. Land used for paddy cultivation in Long An also experienced rapid growth, with an increase from 325,000 to 527,400 hectares in the same period. This increase in planted areas of paddies indicates increased water usage in both provinces, and this trend may continue in this sector in the medium term. An expert from Can Tho University stated that:

> *The POR has an abundance of surface water. Half of that is used for economic purposes and the other half is for maintaining the ecological environment. In terms of economic uses, 80-90% of water is for agricultural production. The remaining 10-20% is water for living and industrial use [E1].*

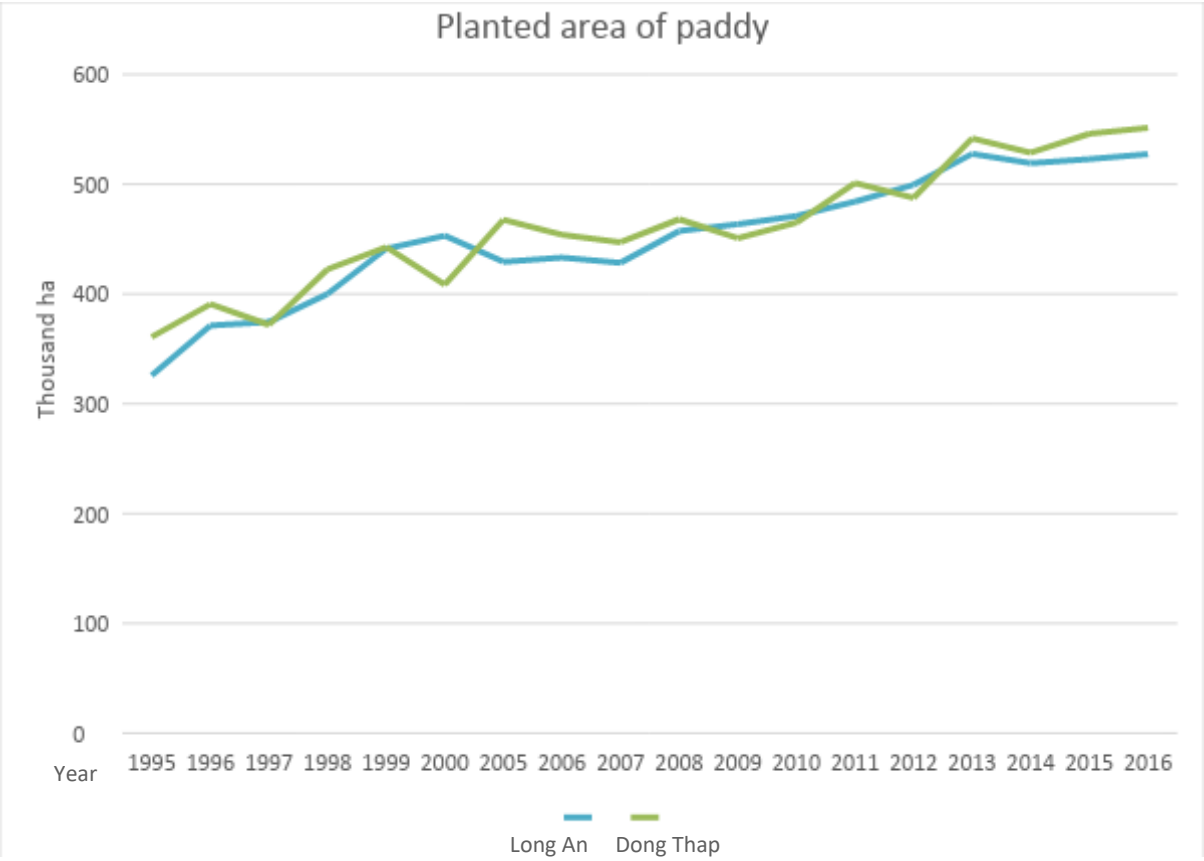

Figure 6.2: Planted area of paddy in Long An and Dong Thap provinces, 1995-2016
Source: Adapted from Dong Thap Statistical Office (2017) and Long An Statistical Office (2017)

In the past several decades, Vietnam has strongly focused on its economic growth, especially through intensification of agriculture and irrigation development, while arguably de-prioritizing other values of environment and sustainability. As a result, the environment of the VMD has been negatively impacted, affecting the people and making the delta more vulnerable to the changing climate and upstream development (Nhan et al., 2007; Lebel et al., 2014; Nguyen et al., 2016; Quan et al., 2018). Many studies have produced evidence of the ecological damage resulting from irrigation structures (e.g. high dikes, sluice gates) and farming activities (Do, 2007; Quan et al., 2018). Figure 6.2 shows that rice farming continues to increase, albeit slowly compared to the early period of the mid-1990s to the mid-2000s. Moreover, large investments in infrastructure for agricultural development also result in more conflict among different interests, and power struggles between the agencies responsible for environmental management. Molle and Hoanh (2007, p. 4) described the conflicts between agricultural and environmental sectors as a "battle over roles", where different sectors try to assume control of a water resource to potentially gain a larger percentage of the state budget.

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This chapter has discussed five main challenges facing integrated WRM and planning in the POR. The first constraint is a lack of transboundary collaboration among administrative areas, and between government agencies. Secondly, inadequate organizational capacity emerged as a major challenge. This was evident in overwhelmed government departments in charge of multiple sectors, and limited human resources across levels, and it appeared even more serious at the lower levels. Moreover, WRM and planning can also be limited by a lack of water resource awareness among both local communities and officials. The research also showed that cross-border and inter-agency information sharing is a major challenge in water management activities in the POR. Finally, intensive investment in agricultural development has, over recent decades, shaped the management of water, and is likely to into the future. This is likely to involve on-going conflict among stakeholders and water users in terms of economic and other uses of water. The next chapter discusses the results outlined in chapters 4, 5, and 6 in the context of POR, reflects on the findings in relation to the literature covered in Chapter 2, and provides recommendations for future studies.

7. Discussion

This chapter discusses the results presented in the previous three chapters. It considers the findings of this study in relation to the literature in the fields of integrated water resource management (IWRM) and multi-level water governance. The study found that the current laws and policies governing water management in Vietnam have incorporated the main principles of IWRM. However, the implementation of this legislation at the local levels remains limited due to a variety of challenges. This chapter will discuss these limitations on the implementation of IWRM in the case study region of the Plain of Reeds (POR), as well as other factors constraining regionally integrated water management in Vietnam that emerged from the research findings. The implications of these constraining factors for the future of IWRM in the POR are also considered.

The chapter proceeds as follows: Section 7.1 discusses the characteristics of the main legislation underpinning water resource management (WRM) and planning in Vietnam and the POR. Section 7.2 then discusses the key factors constraining implementation of IWRM in the study area, and relates this to current literature. The section addresses institutional arrangements, fragmentation among government agencies, and limited inter-agency information sharing. Finally, Section 7.3 considers ways that these constraints might be overcome, and reflects on factors that might enable more effective water management in the study area.

7.1 Principles of IWRM in water law and policy in Vietnam

Facing mounting challenges in the sustainable use and management of water resources, driven by the impacts of climate change and intensifying upstream water demand, the Vietnamese Government is increasingly forced to rethink its management of water resources. Over recent years, the Vietnamese government has responded to these challenges by amending several key pieces of legislation (such as the Law on Water Resources 2012 and Law on Environmental Protection 2014) and promulgating important national strategies and decisions (such as Decision 593, Resolution 120, and the National Strategy on Water Resource to 2020), as discussed in Chapter 4. Analysis of these laws and policies shows that these instruments, which are guiding legal documents regarding WRM and planning, have incorporated important principles of IWRM. Particularly, the Law on Water Resources (LWR) 2012 requires an integrative approach to water management by incorporating requirements for integrated river

basin management. The Law on Environmental Protection (LEP) 2014, for its part, makes room for public participation in relation to water management projects. These principles and provisions have then been reiterated and underscored in several policies and strategies. In particular, the National Strategy on Water Resources to 2020 establishes a central role for IWRM in Vietnam (MONRE, 2006). In relation to the Vietnamese Mekong Delta (VMD) in particular, Decision 593 and Resolution 120 encourage ecological management at a (cross-provincial) regional scale by promoting coordination and collaboration among the respective provinces for regional development. As a result, the POR provinces have been required to come together to develop a coordinated program of activities, in which WRM is one of the main components.

However, the implementation and enforcement of these national laws and strategies remain weak on the ground. They do not specify consequences for local government authorities if they fail to give effect to the laws. The national strategy itself has the status of an executive order and is therefore non-binding. This means that there is no clear mechanism or mandate for local government to implement particular water management practices or procedures, and the implementation of high-level principles, therefore, remains weak at the local level.

The key laws, policies, and strategies relating to water management that were examined in this research operate at the national level. Both the LWR and the LEP set national guidelines, against which it is assumed the government will better be able to address and manage water resources. The principles and provisions expressed in these laws suggest that the State has generally sought to implement IWRM principles in Vietnam. The key laws and policies contain various provisions for increased stakeholder participation in WRM, and should enable collaborative partnerships among the multiple jurisdictions and administrative bodies involved in WRM. The introduction of IWRM principles in law and policy in Vietnam is consistent with global trends in shifting towards more collaborative governance and multi-level structures to sustainably manage water and address related environmental issues (Margerum, 2001; Rahaman & Varis, 2005). In Vietnam, when LWR 1998 was first enacted, many water-related regulations were issued to meet the requirements set. Currently, Vietnam's legislation on the water sector is comprised of a complex system of legal documents, such as the updated LWR 2012 and LEP, at a variety of governmental levels and adopted by different state authorities. The interactions between the different laws and policies are complicated because they do not appear to be deliberately aligned or connected with each other (Wailbel et. al, 2012). This clearly poses a challenge for WRM at the sub-national or regional scale because even if local

authorities were required to implement national policy, they would have to reconcile contradictory or unrelated policies and principles.

However, this research has shown that the local-level authorities (communes) that are most directly responsible for implementing these legal directives are excluded from the process of designing and planning them. This stark division of functions between the centralized focus of political power - the central government, CPV and PPC - and the commune level, reflects the institutional challenges that exist for lower levels of governance in adapting legal measures to fit local contexts and to address specific WRM issues. This aligns with the conclusions of Phuong et al. (2018), who describe how many of the communes they studied in Central Vietnam expressed a need to modify the national environmental laws to fit their local contexts. Like the respondents in Phuong et al. (2018), interviewees in this study expressed concerns around addressing specific local vulnerabilities to climate change under national-level WRM and planning. Although IWRM has gained wide acceptance as a concept internationally, research has found that it has proven difficult to implement in specific national and local contexts (Biswas, 2004; Molle 2008; Molle & Hoanh 2011). This is also reflected in the results of this study in the case of Vietnam.

The following sections discuss factors that have constrained the implementation of the principles of IWRM, which are embodied in national law and policy, across the provinces of Long An and Dong Thap in the POR.

7.2 Constraints on implementation of integrated management and planning

7.2.1 Institutional arrangements

The most prominent constraining factor found was the structure of Vietnam's central government. Vietnam is characterized as a centralized party-state system consisting of fragmented departments and sub-divisions. This fragmentation emerged out of the *Doi Moi* reforms in 1986, where a national process of decentralization led to a lack of articulation between the central government and the local authorities, and promoted a competitive dynamic among neighboring provinces and districts (Anh, 2016; Waibel et al., 2012). This legacy means that there is only relatively limited integration among agencies and actors, both vertically between levels, and horizontally across societal sectors, in the governance of water resources. Findings from this study show that there is almost no transboundary collaboration among sectors and provinces. This is in line with previous studies, such as those by Waibel et al. (2012)

and Molle and Hoanh (2008). Having examined the gap between IWRM principles in policy, and implementation on the ground in the VMD, Waibel et al. (2012) found that the critical challenge for WRM at inter-provincial river basin level is the lack of coordination among provinces. They concluded that the existing gap is not due to poor capacity or resource constraints, but the 'peculiar structural features' of the Vietnamese government. However, the findings from this research contrast with Waibel et al.'s research in that it finds that poor capacity and limited resources at the local government level are relevant constraints on WRM in the region. Molle and Hoanh (2008) also argued that IWRM is incompatible with the predominant institutional arrangements in Vietnam. Findings from this research also highlighted this disjointed character of the Vietnamese government, which is strongly centrally led on one hand, but detached from lower levels of government, and disconnected horizontally at these lower levels (i.e. between provinces and districts in the POR) on the other hand. This, in turn, hinders the local implementation of policy principles embedded in national legislation, and constrains IWRM in particular, which requires close coordination and cooperation across jurisdictional boundaries. The centralized power of the Vietnamese government leads to a broadly 'top-down' approach (depicted in Figure 5.2, chapter 5), in which the national level establishes the vision and laws that should guide the development of the country. The Party shapes the vision for WRM, through its dense and wide network of staff, which is then supposed to be implemented by the various levels of government. Hence, WRM activities are influenced by the ideals of the Party, and are implemented by the State.

In line with this top-down approach, WRM legislation is supposed to be communicated and transmitted down through the complex hierarchy of the government (Figure 5.2, chapter 5). The existing multi-level polity makes for a complex and often difficult process of implementing and managing projects to comply with the applicable water laws. This challenge is also supported by studies of multi-level environmental governance in other countries (e.g. Newig & Fritsch 2009; Jusi; 2013).

Furthermore, the multi-level governing system in Vietnam can be described as a mixture of Type I and Type II multi-level governance (MLG) arrangements (following Hooghe and Marks 2003). An important attribute of the Vietnamese polity corresponding to Type I MLG is the non-intersecting memberships of the various territorial Provincial People's Committees' (PPC). Only high ranking members of the CPV in a specific province can lead the PPC in that area. The activities of PPCs in different provinces usually do not intersect at all. The PPC acts as an intermediary between the center and the lower tiers of government. Only the PPC receives

direct instructions from the central government. As many officials expressed in the interviews, this disconnect reoccurs between the provincial government and lower levels. For example, the provincial level holds considerable decision-making power in provincial water resource management planning, but provincial planning is far removed from the local reality of water resources at the commune scale, where provincial rules are supposed to apply. Because of the provincial-territorial boundaries that are reinforced by the power of the PPCs in the POR, water management at the local level can be rendered ineffective. For water users in Dong Thap and Long An, this means little scope for involvement, given lengthy and complicated bureaucratic processes. The perspectives of district officials, presented in Chapter 5, reflected the tedious procedure for submitting and approving a WRM proposal to the PPC. If the proposal does not closely match the provincial goals then it risks rejection. Hence, the lack of interactions and non-intersecting memberships among all state levels and actors can be an obstacle for stakeholders across all sectors. It makes it difficult for actors at any given level to communicate and implement policy requirements, and to manage water resources. The experiences in the region studied seem to be in contrast to the findings of Phuong et al (2018) in Central Vietnam (discussed in Chapter 2), where lower governing levels did manage to adapt central government policy more effectively to their specific local contexts. This difference may be a result of the small scope and the particular subject of their study. Phuong et al. (2018) investigated the barriers and enablers to climate change adaptation in a central province in Vietnam. The concerns may be slightly different between water management and climate change adaptation. Moreover, their case study was of a single administrative province, Thua Thien Hue province that is not involved in cross-border decisions.

In relation to Type I MLG as described by Hooghe and Marks (2003), fragmentation within the Vietnamese government system can be found not only in the central jurisdictions but also at the local level. This study found a lack of collaboration at the commune level in the POR. For example, two non-state actors, farmer-led cooperatives and water service enterprises, hold distinct responsibilities for managing water for irrigation at the commune level. Farmers are tasked with voluntarily addressing local water issues, while water service enterprises are focused on delivering water services. The lack of coordination and engagement between these two actors illustrates how fragmentation not only occurs at the central level but also at the most local levels within the POR.

These governance arrangements mainly reflect the multi-level system in Vietnam in terms of Type I, rather than Type II, multi-level governance. These Type I characteristics are mirrored

at the national scale within Vietnam, where there is a strongly centralized government authority, and through the lack of governmental coordination across levels. In particular, there is no legal platform that allows the lower levels to have an active and direct role in consultation and representation of community priorities to higher levels. The Commune People's Committee holds regular meetings to discuss and aggregate community concerns that are then relayed to the District People's Committee and then up to the PPC. In order for local priorities to inform WRM planning, they must first be communicated back up through these political layers in order to be approved. Because of the centralized locus of power in the central and provincial government, the institutional constraints related to this type of top-down approach hamper the advancement of a version of WRM that is flexible and tailored to the needs and contexts of lower levels of governance in the POR. These findings are broadly consistent with those of Phuong et al. (2018), who also demonstrated that the top-down approach to climate change adaption activities produces inconsistencies between the central government and the lower levels given their specific contexts and vulnerabilities.

7.2.2 Fragmentation among government agencies

The lack of transboundary collaboration within Vietnam, which has emerged in part due to the rigidity of vertical hierarchy and jurisdictional boundaries under the Type I multi-level governance system, is not exclusive to the central and provincial governments, but is also evident between the provinces and other non-state stakeholders such as water service enterprises. This study found isolated networks of governmental departments working within the four levels - national, provincial, district, and commune. Water-related ministries, such as MARD and MONRE do not have direct links with each other (Figure 5.2). Because of the lack of coordination, these two ministries often compete for water projects as mentioned by Molle and Hoanh (2008), who describe the interaction among them as a "turf battle over roles". The more prominent ministry, MONRE, has primary responsibility for WRM in the country. In terms of specific responsibilities, MONRE is the designated ministry behind inter-provincial river basin planning, and thus should work with the provincial governments that oversee the rivers within a particular region. However, the central government requires MONRE to delegate the actual management of water resources to several different ministries – e.g. the Ministry of Trading and Industry, Ministry of Science and Technology, Ministry of Construction, etc. (as outlined in Chapter 2) – according to the uses of water in multiple industries. The transference of responsibilities from MONRE to other ministries to manage

water resources for their specific activities fragments administrative power in WRM even further. Further research is required to systematically assess the effectiveness with which MONRE is implementing WRM policy in Vietnam. Regardless, the lack of interlinkages between such water-related ministries and the central government reflects the fragmented administration that exists in Vietnam's water governance sector, and that leads to sub-optimal management (and in many cases mismanagement) of water resources.

7.2.3 Lack of inter-agency information sharing mechanisms

Thus far, this chapter has discussed the lack of transboundary collaboration among the central government, provincial administration and water ministries, which serves to limit the advancement of IWRM and contradicts the principles of integrated and collaborative governance, which encourage all government actors to cooperate in WRM. In contrast, research institutions and development partners play a fairly large role in WRM and planning at different levels in the POR. However, research institutions and development partners only collaborate with the central government when their help is requested. Thus, their participation is ad hoc, and not routine or consistent. This study found a general lack of engagement with these two groups of non-state actors under the primary water resource legislation, the LEP and LWR.

In the interviews, farmers and government officials communicated their trust in the research institutions, stating that the universities *"have solutions"* and can also *"increase income and productivity"* because *"they study models that help people make more money and reduce impacts on the environment"* (D2, Chapter 5). Since these research institutes are reputable and provide professional advice, they are seen as playing a role in shaping WRM in the POR, even though their involvement is upon request. For example, planners and officials consult relevant research institutes when necessary through meetings and discussions as discussed in Chapter 5. Similarly, international development partners and local NGOs also influence water management. Major international development partners, such as the Asian Development Bank, provide financial support and advice to government to advance water management in the country, while NGOs work in local communities to improve livelihoods through specific projects and education and capacity-building initiatives. Such initiatives include enhancing women's and local organizations' participation in WRM in the delta, through projects such as that led by the Centre for Water Resource and Conservation and Development (Chapter 5). Although research institutes, universities, and development partners, including NGOs,

influence WRM in the POR, there is no formal relationship between the central government and these non-state groups. Rather, these groups inform and shape WRM policy through informal channels and opportunities with research and advice, although their importance is acknowledged by most Vietnamese officials. Unlike most government actors, whose activities are confined by administrative boundaries and jurisdictions, these non-state groups are not bound to a specific level of the government or territory. However, the findings of this study show that non-state actors are only passively involved in the implementation of IWRM on the ground, and their influence is mostly limited to the national policy level. The absence of legislation requiring their involvement means that non-state actors participate in IWRM only when government actors request their guidance. Because the roles of these non-state actors are not legally defined, IWRM in the POR sub-region faces constraints in achieving collaboration and participation by all relevant stakeholders. Administrative separatism and bureaucratic fragmentation constrain the integrated approach in the study region, as has been found in studies of other cases (Hjorth & Dan, 1994; Hoope et al., 1999).

In the absence of legal responsibilities assigned to the stakeholders, there is a lack of channels and mechanisms for inter-agency information sharing. Like the bureaucratic fragmentation and administrative separatism described by Hjorth and Dan (1994) in their study of urban water management in Asian countries, an absence of legal guidelines and formal responsibilities was found to hinder IWRM. In this study, policy analysis found that the LWR only *encourages* inter-provincial data collection and collaboration, but there is no clear mandate that obliges provinces to work together. Hence, individual provinces, such as Long An and Dong Thap, conducted separate WRM planning processes and developed their own water development plans. The lack of transboundary collaboration in information sharing limits data access across the POR region. This was encountered first-hand during the study, as it proved difficult to access data about WRM in the two provinces. Much of the data that the local government authorities gathered was not publicly available. Therefore, it is suggested that there should be a clear institutional mechanism through which all stakeholders can contribute their water resource data to an easily accessible central database to advance IWRM in the POR.

7.2.4 Summary of factors constraining an integrated approach

The implementation of IWRM depends on the interactions and relations of the three major elements discussed: (1) laws and policies, (2) local government (provincial, district and

commune); and (3) involvement of non-state actors including water users and communities. Figure 7.1 below illustrates key relationships and constraints facing each element in terms of its relation to each other element in the context of IWRM in the POR.

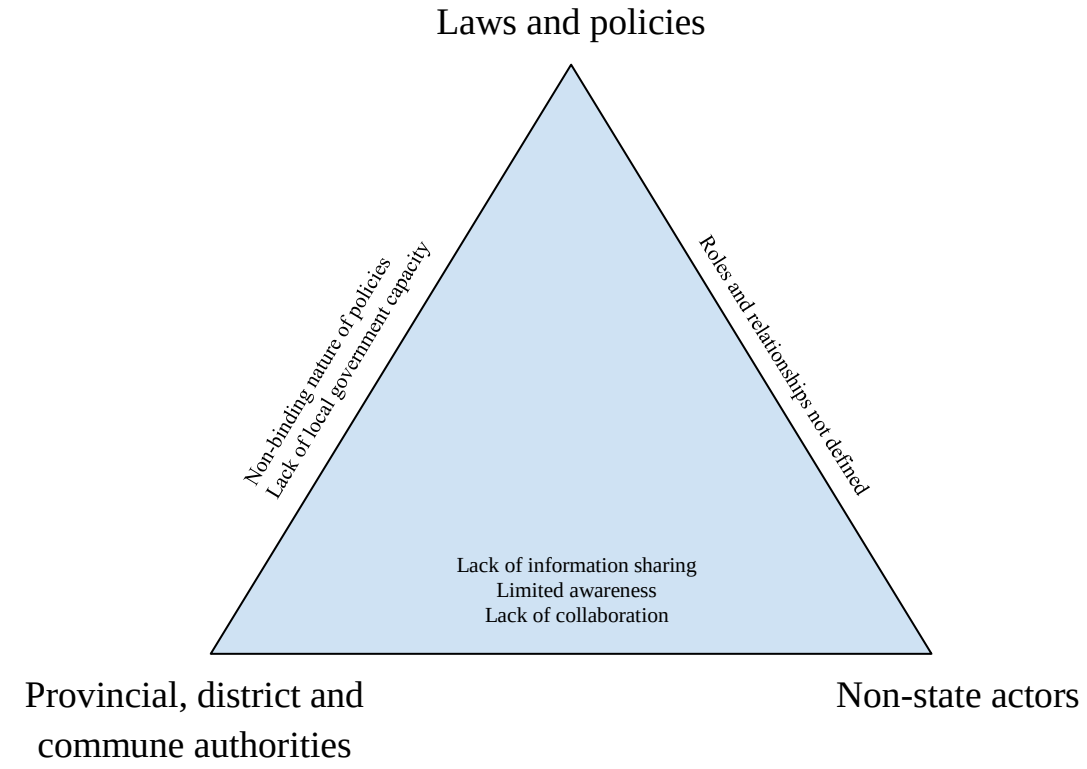

Figure 7.1: The relations of three major element influencing water resource management in the Plain of Reeds
Source: Author (2019)

Despite decentralization efforts, substantial governing powers have yet to be extended further downwards to districts and communes, and outwards to non-state actors. Some studies have argued that where the central government has granted additional powers and responsibilities to the local levels of government, most of these have remained at the provincial level (Florde, 2003; Garrido et al., 2009), as opposed to the district or commune levels. Therefore, the local government designated in Figure 7.1 are primarily from the provincial level since much of the data collected illustrate limited district and commune level participation in WRM. The relationship between the local government and laws and policies is characterized by the non-binding nature of key policies, and the lack of capacity among lower level government agencies. As discussed above, analysis of current WRM legislation – LEP, LWR, Decision 593, Resolution 120 and the National Strategy on Water Resource to 2020 – all indicate the

intentions of the government to encourage IWRM. Yet, interviews with provincial officials revealed challenges among the administration with IWRM implementation because of the legislation's non-binding and ambiguous nature in terms of defining responsibilities. Even though an integrated approach to water management is encouraged by the policies, government agencies lack the resources and human capacity necessary to successfully implement IWRM in the region.

Consequently, partial decentralization to the provincial level can lead to a lack of regional collaboration between government agencies and non-state actors on the lower points of the triangle and to the misalignment of accountability between the government agencies and the laws that guide them. Since the laws and policies do not clearly mandate collaboration or provide legitimate linking mechanisms between government agencies and non-state actors, a lack of information sharing and limited awareness about WRM planning and decision-making processes exist. The absence of regional cooperation and misalignment of accountability are consistent with findings of the Vietnam Development Report 2010 (Garrido et al., 2009). They investigated devolution and accountability in Vietnam, and found that even though central government granted additional powers and responsibilities to the local levels, these have remained primarily at the provincial level, which can lead to a misalignment of accountabilities, and act as a barrier to regional cooperation.

Additionally, the relationship between laws and policies and non-state actors is characterized by undefined roles and responsibilities. The lack of participation of the commune and community levels observed in this research aligns with the study of Fforde (2003), which showed that where non-state actors have poorly defined roles under the law, this makes it hard for them to participate in IWRM. Results show that the role of local and non-state stakeholders is limited to implementing the decisions made at the national level. There is little participation from the lower levels in shaping WRM planning objectives and decision making. Moreover, there is no legal platform for non-state actors to be involved in IWRM in the POR which opposes the principles of an integrated management approach. Results from FGDs show that local communities in Long An and Dong Thap who are able to identify local water issues are usually ignored by the government, which can lead to mismanagement of local water resources. A call for a collaborative platform to include all stakeholders may help to remove barriers to the integrated and sustainable governance of these resources.

The nature of the key relationships shaping IWRM in the POR, as depicted in Figure 7.1, indicate the need to shift the administrative perspective of the region away from water

governance in individual provinces, and towards to a single ecological unit. This study has found, like Waibel et al. (2012), that institutional fragmentation in Vietnam obstructs IWRM. Therefore, decentralization of power in natural resources management to a more localized, community-focused approach may be beneficial (see also Turton et al. 2007). The results of this study suggest that there is a need to increase the degree of collaboration and participation of actors both horizontally and vertically within the multi-level Vietnamese water governance system.

7.3 Enabling an integrated approach at the scale of the Plain of Reeds

The aforementioned challenges in the implementation of IWRM can draw attention to where interventions to enable improved management might be focused. Addressing these challenges could advance and improve the implementation of IWRM at the scale of the POR. The existing laws and policies that have incorporated the principles of IWRM could be a useful starting point. The LWR and LEP are currently not well implemented at the local levels. Therefore, what is needed to improve the situation is a means to reinforce the legislation in practice, and the development of a monitoring system to supervise and require the local levels to give effect to and comply with these legal requirements. This reinforcement and monitoring system could be overseen through a collaboration of provincial, district, and commune level officials, in which progress towards implementation of IWRM could be discussed in regular meetings, and experiences could be exchanged.

Secondly, even though the top-down management approach of the Vietnamese state has shown some limitations for participation and collaboration among government agencies, this management structure and the wide network of local government authorities could also be seen as an opportunity to implement IWRM. This management structure is characterized by a culture of following orders from the higher to the lower levels, and from central to local government. For instance, if the central government promulgates legislation that clearly and strongly requires partnership and cooperation among specific stakeholders in planning, this legislative framework is likely to be implemented immediately. This can be seen through such policies as Decision 593 and Resolution 120. However, the limitation of these instruments is that they do not clearly specify the roles of all stakeholders and government levels. Thus, amendments could be made to clearly outline the roles and responsibilities of said groups.

Moreover, the limited capacity of provincial government agencies leaves room for non-state actors to participate in WRM planning and implementation. From this study, the provincial government's implementation of Decision 593 and Resolution 120 showed that provincial officials needed the assistance of research institutes (MDI and Can Tho University) and NGOs (IUCN) to facilitate and develop inter-provincial WRM plans as mentioned in Chapter 4. Because of the limited capacity of the provincial government, an opportunity opened up for non-state actors to participate in WRM planning. However, this enabling factor is informal, and could benefit from proper legislation that formalizes the partnerships that already exists between non-state actors and provincial government authorities. The development of legal platforms that allow such collaboration may increase cooperation and improve IWRM in practice at the scale of the POR. The importance of the issue (especially with increasing stress on water resources due to climate change and upstream development), and the scope to have meaningful involvement alongside local government authorities, would likely attract important and competent stakeholders to become involved and engaged in collaboration.

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Overall, there are several constraining factors on the implementation of IWRM in the POR sub-region, and specifically in Long An and Dong Thap provinces. The major influence is the fragmented governance structure in Vietnam, which hinders WRM collaboration and coordination. In addition to the institutional limitations of the government, unclear legislation, informal stakeholder participation, and an absence of information sharing mechanisms all play a role in slowing the advancement and implementation of IWRM in the sub-region. These constraints are reflected in the relationships among the legislative laws, local government and non-state actors, as depicted in Figure 7.1. The findings are consistent with other research that has suggested that IWRM is incompatible with the current institutional arrangements in Vietnam. Some of the constraints facing IWRM point the way to where changes and interventions could be made which, if applied appropriately (as discussed in Section 6.4), could foster greater integration and collaboration in WRM. The following chapter presents the conclusions of this study, and identifies directions for future research.

8. Conclusion

This study has been motivated by my own experience as a local resident of the Vietnamese Mekong Delta (VMD). Water resource management (WRM) has been considered as an important sector in the region because it is the main source of economic activity and livelihoods. Therefore, it is important to ensure that water resources will be effectively managed into the future – especially given increasing pressures on the resource. This will help ensure that conflicts over this resource are minimized and its benefits and sustainable use are maximized.

The primary aim of this study, as noted in Chapter 1, was to explore the key constraints on integrated water resource management in the Plain of Reeds (POR). The POR is seen as a cross-border management unit embedded within the complex multi-level governance system of Vietnam. The case study has relied on analysis of policies and official documents, as well as the academic literature, and primary data in the form of the perspectives of key stakeholders and water users gathered through interviews and focus group discussions.

This chapter (section 8.1) summarizes the findings of the study according to the research questions posed in the opening chapter. It outlines the key policies, actors, and constraining factors in WRM and planning in the POR. Section 8.2 then discusses some limitations of the research and offers recommendations for future studies on the implementation of integrated water resource management policy and principles in Vietnam. At the end of this section, potential means to improve water governance in the study area are summarized.

8.1 Conclusions in response to the research questions

Question 1: What are the key policies, strategies, and plans guiding water resources management in the POR and how have they been implemented in practice?

Based on the document analysis and interviews, the study found that there have been a number of major developments in legal frameworks regarding WRM in Vietnam over the last two decades (Chapter 4). Two key laws provide the guiding principles for WRM in Vietnam. These are the Law on Environmental Protection 2014 (LEP) and the Law on Water Resources 2012 (LWR). These laws have significant influence over water management strategies in the country, as well as the POR sub-region. Additionally, WRM is influenced by the National Strategy on Water Resource to 2020. These instruments call for and specify an integrative

approach to water management in the country. In relation to the POR sub-region in particular, there are two significant legal documents, Decision 593 and Resolution 120, which further encourage an integrative approach by requiring provinces to coordinate and collaborate in the development and implementation of WRM at the local levels.

These policies intentionally promote a collaborative approach and the coordination of different administrative jurisdictions in the VMD. However, the enforcement of these national policies remains weak, and getting local government authorities to implement them at the provincial, district and commune levels is a challenge. Particularly, the National Strategy on Water Resource to 2020 is only executive order and therefore not strictly legally binding on local governments. Its implementation depends on where the priorities of local government lie. Even though Decision 593 and Resolution 120, which make specific reference to the local level and the POR, are strictly legally binding on local authorities. Their implementation is limited by the lack of experience among local authorities in inter-provincial collaboration and planning. Decision 593, Resolution 120 and the national strategy illustrate a tendency at the level of the central government to pursue a more collaborative and integrated approach to sub-regional water management planning to what has been the norm in past decades.

Question 2: Which are the key actors in water management and planning in Vietnam and how do they influence water planning and decision-making in the POR?

The findings from this study show that there are five key types of actors engaging in WRM and planning in the POR (Chapter 5). These are the Party Committees, local governments, universities and research institutes, development partners and water service enterprises, all of which play different roles. The Party Committees have a significant influence on planning objectives and strategies, while provincial government bodies are responsible for decision making on planning activities within their territories. Planning across provincial boundaries (i.e. involving two or more provinces) requires approval from the central government. The Party's impacts and influences on the water sector are not only evident in the planning processes, where they provide guidelines and party frameworks, but also in the implementation of water management activities at all levels. The substantial influence of the Party is mainly because of the political power it has within the structure of government in Vietnam, and the dense network of party members across all governance levels.

Generally, the central government has the ultimate authority to approve or deny the planning decisions of a sub-region. At the sub-national level, the provincial governments have the most power in making decisions. In particular, they decide which stakeholders can be involved, and to what extent, in WRM and planning. The two lower levels of governance (district and commune) are indirectly involved through collecting and synthesizing opinions and issues from local communities.

The promotion of collaboration between provinces has attracted a lot of attention from different stakeholders. This was mentioned by the local government officials and experts interviewed in the POR sub-region. However, implementation at the provincial level has been facing challenges from the outset. This is mainly because the provinces do not have experience in cooperating with each other, and establishing a mechanism for fair involvement and distribution of responsibilities among provincial members has not been easy. This requires a lot of assistance and support from other stakeholders in order to develop an integrated sub-regional master planning process for socio-economic development, including water management.

Development partners, universities and research institutes were found to have influenced WRM and planning through advising and consulting (Section 4.2). Particularly, they provide support to the government at all levels in terms of facilitating, planning, providing advice and expertise, sharing and disseminating information, informing policy-making, and implementing activities and projects on the ground. Moreover, they are also key donors providing financial support to develop and implement plans and to realize infrastructure projects. Meanwhile, the involvement of water service enterprises is largely limited to the installation, operation and maintenance of water projects, rather than participation in planning. The construction of state irrigation schemes and related infrastructure is usually left to state-owned companies. Therefore, the state has a lot of power in water resources management and planning, whereas non-state actors do play specific, roles but are relatively less involved.

Question 3: What are the key factors that constrain IWRM in the POR?

This study identified five main challenges facing WRM and planning in the POR. The first constraint is a lack of transboundary collaboration among administrative areas and between government agencies (Section 5.3). Due to the complexity of both vertical and horizontal governance dimensions, there are relatively few mechanisms to allow collaboration, and a lack

of legal provisions that would require the formation of partnerships and cross-border collaboration. These factors are not consistent with the principles of IWRM as expressed in the LWR 2012, and serve to constrain WRM and planning in the POR. Respondents revealed that there is almost no collaboration among government agencies and provinces in the POR, stating *"We [DONRE] do our tasks, they [DARD] do their tasks. We will work together if there is an assigned task given by the Provincial People's Committee" [P1].* Moreover, Vietnam is characterized by a strongly centralized party-state system, but also by fragmented departments and sub-divisions within levels of government. The top-down governance structure in Vietnam limits the integration and public participation of stakeholders in both vertical and horizontal dimensions.

Inadequate organizational capacity was also indicated to be one of the major challenges. This was evident by overwhelmed government departments in charge of multiple sectors, and limited human resources and staff capacity across levels. It seemed to be even more pronounced at the lower levels. While approximately 35 per cent of the staff of the Ministry of Natural Resource and Environment (MONRE) have postgraduate qualifications, only a little over one per cent of government staff at the local level have a Bachelor's degree or higher.

Moreover, WRM and planning can also be limited by a lack of water resource awareness among local community members and officials. For instance, most of the interviewees and focus group discussants in this study believed that the river can clean itself and water is an unlimited resource. This kind of thinking, in turn, results in a limited appreciation of water management issues and minimal effect on behavior to manage water resources sustainably. The study also found that there is no uniform or coordinated mechanism to collect, manage and effectively share data between agencies and provinces in the study area. This can result in fragmented planning in the sub-region and an increased cost of data collection. Additionally, the lack of information sharing could have severe impacts on neighboring administrative areas, where impacts of water contamination or depletion have cross-border effects.

Finally, on-going intensive investment in agricultural development in the POR will also continue to shape the management of water resources in the sub-region, potentially increasing conflicts among stakeholders and water users in terms of competing interests in water for irrigation and economic development. In the provinces studied for this research, water for agricultural production is applied to diverse uses, but mainly for the production of rice, vegetables and fruits. These agricultural sectors make up a high proportion of total agricultural land use in the area (Chapter 6), taking a large portion of water allocated for irrigation. The

continued development and expansion of these sectors is likely to command high priority in sub-regional planning, and therefore significantly shape the allocation and management of water resources.

Question 4: How can the identified challenges be tackled to help achieve IWRM?

The final objective of this study was to make constructive recommendations for possible solutions to tackle the WRM challenges identified, and improve WRM in Vietnam. To improve water management and planning, the authorities should ensure that they provide opportunities and incentives for all relevant stakeholders to participate in management and planning. Legal instruments and policies probably need stronger, binding character to require the collaboration of government agencies and different administrative areas in WRM. These instruments should also clearly define the responsibilities of key actors to ensure the effectiveness of management and planning activities. In addition, the government should consider making more investment in organizational capacity in the water sector, so as to provide more training, capacity-building and awareness-raising among officials and water stakeholders. This should help different local-level actors to cooperatively and collaboratively consider appropriate allocation of water resources to different uses to minimize potential conflicts among water users.

8.2 Outlook for further research

Some of the limitations of this study have highlighted lessons and avenues for further research. It is important to acknowledge that, this single case study is based on the perspectives of particular stakeholders and key informants, and the interviews and focus group discussions have been interpreted through the author's own lens. While the overall number of research participants was relatively small, given the scope and resourcing of the research, a balanced mix of key stakeholders and water users was sought. There is certainly scope for extended field work and recruitment of larger numbers of research participants to collect a wider range of views and perspectives on water use and management at the local level.

Throughout the field work component of this study, there were obstacles in recruiting interviewees willing to share their perspectives on, and experiences with, WRM. Because of the hierarchical nature of the Vietnamese government, national level officials were difficult to access. There were many administrative barriers to reaching national officials. International actors were also omitted from the study. The absence of these two groups of potential

informants is important to note. Future studies should be conducted on the roles and influences of international actors and national state actors to fully comprehend implementation of IWRM in the POR from a multi-level perspective.

At the commune level, farmers from Long An and Dong Thap provinces were interviewed in focus group discussion settings. As the first FGD held in Dong Thap province had a local official present, the atmosphere was somewhat uneasy for most of the farmers present. However, after the departure of the official, farmers were more willing to participate freely. Finding ways to engage with local stakeholders in settings where they feel free and comfortable to share takes time, and would benefit from extended time in the field.

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Overall, the results from this study illustrated the need for better legislation, policy, and implementation, in Vietnam to advance IWRM in the POR, and hopefully throughout the wider VMD and Vietnam. It provided new insights into how the organizational structure of the Vietnamese government impacts on WRM in cross-border settings at the sub-national scale. Because of the way the government is structured, IWRM is facing certain challenges in implementation. However, the findings do show there is hope for a more collaborative approach. Opportunities are revealed in highlighting the constraining factors, and these offer potential paths by which to advance IWRM in the POR. Although it may take some time to improve knowledge and understanding of the advantages of collaborative and integrative approaches to WRM, it is believed that a more effective implementation of IWRM can help move practice in Vietnam towards sustainable water management.

The application of a multi-level governance (MLG) analytical lens proved useful to understanding the complex political context in Vietnam, and its implications for management at the local levels. The MLG perspective also helped to identify and make sense of the interactions among government agencies and non-state actors across multiple governing levels, but particularly at the provincial, district and commune levels. It allowed the researcher to analyze the relationships among numerous government bodies in Vietnam, and trace how those relationships impacted IWRM. Through the MLG lens, the underlying causes of the various constraining and enabling factors of IWRM can be better understood.

It is hoped that the findings of this study can support an improved understanding on the part of policymakers and scientists who are working in the field of water management and planning

in Vietnam and beyond. Understanding the challenges faced in this case study region can help policy makers and planners to identify points for intervention to aid implementation of IWRM principles. The relevant authorities, at different levels in Vietnam, should continue to extend responsibility and powers to non-state actors to actively participate in WRM planning. Vietnamese policymakers should also promote collaboration among jurisdictions by strengthening legal requirements for inter-provincial collaboration and cross-border cooperation in water management.

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Appendices

Appendix A: Human Ethics Approval Letter

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2018/08/LR

24 April 2018

Khiem Nguyen
Waterways Centre for Freshwater Management
UNIVERSITY OF CANTERBURY

Dear Khiem

Thank you for submitting your low risk application to the Human Ethics Committee for the research proposal titled "Factors Enabling and Constraining Sustainable Water Management in the Plain of Reeds, Vietnam".

I am pleased to advise that this application has been reviewed and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 16th April 2018.

With best wishes for your project.

Yours sincerely

R. Robinson

pp.

Professor Jane Maidment

Chair, Human Ethics Committee

Appendix B: Interview Guide

Department: Waterways Centre for Freshwater Management
Telephone: +64 3 369 5600
Email: khiem.nguyen@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Constraining factors water resource management and planning in the Plain of Reeds, Vietnam

Interview Guide

Date: / /2018

Time: start _____ finish _____

Organization: _____

Interviewee position: _____

Interview topics and questions: the 4 topics (from A to D) are fixed; specific questions will vary.

A. Main water uses and challenges in the Plain of Reeds

- Can you describe the water resources and uses in your locality/sector?
- What are the main water uses in your locality/sector?
- Why are they the main water uses? What are the roots behind that?
- Are the water uses mentioned facing any challenges/difficulties in your locality/sector? The sources of challenges/difficulties? And how?
- Any changes in main water uses that may happen in the future? And what are the causes of it?
- Is there any official report/assessment of the state of water and/or water resources challenges in your locality/sector?
- Is water management given priority in your locality/sector? And why?

B. Water management policy/plan/project and key actors

- When and how did water management become a policy issue in your locality/sector?
- What are the main water management policy/plan/project in your locality/sector?
- Who are involved? What is their roles? Who plays central role? And Why?
- Is private sector and civil society organization involved in water management in your locality/sector? If yes, who they are and what are their roles?

- Can you evaluate your role in water management policy/plan/project?
- Can you assess the role of NGOs in water management activities?
- Can you describe the process through which water management policy/plan/project is implemented?

C. Enabling and constraining factors of sustainable water management

- Do you think water management is important? Why?
- What are the key constraining factors of sustainable water management in your locality/sector?
  - ☐ Fragmented roles and responsibility
  - ☐ Overlapping and disjointed planning
  - ☐ The spontaneous farming activities of local farmers
  - ☐ Uncertainty in water supply
  - ☐ Awareness and behavior
  - ☐ Old and long lasting practices
  - ☐ Agriculture development and population growth
  - ☐ Capacity in managing water resources
  - ☐ Others
- Can you assess the co-operation among relevant agencies (within your locality/sector and between provinces)?
- Can you assess the co-operation among administrative levels (province, district, commune, community)?

D. Potential solutions for challenges identified.

- Can you provide suggestion for each challenge identified?
- With each suggestion, what may you have to deal with?

Analytic memo right after the interview

What were your personal feelings and reflections as you were interviewing? How did you personally relate to your participant? What question were useful/relevant? What were not? Were there any other questions that you should have asked? How satisfied are you with the interview? What concepts stand out for you from the interview? What are the most useful/relevant information?

Appendix C: Information sheet for potential interviewees

Department: Waterways Centre for Freshwater Management
Telephone: +64 3 369 5600
Email: khiem.nguyen@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Constraining factors water resource management and planning in the Plain of Reeds, Vietnam

Information Sheet for potential interviewees

I am a Master's Student and I am investigating the challenges of sustainable water resources management at the regional scale and their enabling and constraining factors. The purpose of this study is to explore these aspects under conditions of climate change and increasing intensive water intakes in upstream. To understand the current water challenges and management approaches, I would like to interview a wide range of stakeholders from those involved in the planning and using water resources. I am interested in your knowledge, opinion, and/or personal experiences relating to water management and water use.

I will be asking questions about:

- Perspective on water management/challenges – Whose responsibility? What are difficulties?
- Main water usages in *Dong Thap Muoi* sub-region - How they have changed over times? Its trends?
- Factors enabling and constraining sustainable water resources management in the sub-region? How they should be deal with?
- The opportunities and challenges of addressing the key water resources management issues at the scale of *Dong Thap Muoi*, e.g. increasing trend in integrated management, changes in water supply and climate, etc.
- Potential solutions for challenges identified.

If you choose to take part in this study, I will contact you to arrange a convenient time and place where I can interview you. I anticipate the interview will take about 30 to 45 minutes. Following the interview, I will provide you with a transcript and will ask you to confirm it is an accurate record, and to indicate whether you are willing for direct quotes from the interview to be used or not. If you are willing for quotes to be attributed, a suitable form of words will be agreed with you, identifying either you personally and/or your organization, or a broad stakeholder group only. No comments will be attributed without permission.

Participation is voluntary and you have the right to withdraw at any stage without penalty. You may ask for your raw data to be returned to you or destroyed at any point. If you withdraw, I will remove information relating to you. However, from December 2018 it will become increasingly difficult to remove the influence of your responses from the analysis of all interview responses.

The results of the project may be published. The final thesis will be a public document and will be available through the UC Library. However, **you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent**. To ensure anonymity and confidentiality, your name and other identifying details will be removed from your interview transcript and replaced with a code. Paper copies for the researcher's use will only be made once the transcripts are anonymized. A list of codes and interviewee details will be kept in separate folders and stored on the researcher's password protected Google Drive account and personal UC account for the researcher's use only. On completion of the thesis the data will be removed from Google Drive but stored long term (5 years) in separate files on the UC server. After 5 years, all transcript records will be deleted.

Please indicate to the researcher on the consent form if you would like to receive a copy of the summary of results of the project.

The project is being carried out as a requirement for a Master of Water Resource Management by Khiem Nguyen (contact details above), under the supervision of Dr Ed Challies, who can be contacted at edward.challies@canterbury.ac.nz. He will be pleased to discuss any concerns you may have about participation in the project.
This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you will be asked to complete the consent form at the interview or return by email in advance.

Appendix D: Consent form for interview participants

Department: Waterways Centre for Freshwater Management
Telephone: +64 3 369 5600
Email: khiem.nguyen@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Constraining factors water resource management and planning in the Plain of Reeds, Vietnam

Consent Form for interview participants

- ☐ I have been given a full explanation of this project and have had the opportunity to ask questions.
- ☐ I understand what is required of me if I agree to take part in the research.
- ☐ I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- ☐ I understand that any information or opinions I provide will be kept confidential to the researcher and that any published or reported results will not identify the participants or their organizations, **unless specific consent for quotation attribution has been provided**.
- ☐ I understand that a thesis is a public document and will be available through the UC Library.
- ☐ I understand that all data collected for the study will be kept in password protected electronic form and will be destroyed after five years. Paper copies of interview transcripts will only be printed once anonymized and will be for the researcher's use only.
- ☐ I understand that I can contact the researcher (Khiem Nguyen – details above) or supervisor Ed Challies (edward.challies@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).
- ☐ I would like a summary of the results of the project.
- ☐ By signing below, I agree to participate in this research project.

Signed:_____
Name:_____Date:_____
Email address:_____
Phone number: _____

Please return the consent form to Khiem Nguyen by email at khiem.nguyen@pg.canterbury.ac.nz; or post to Khiem Nguyen, c/o Waterways Centre for Freshwater Management, Private Bag 4800, Christchurch 8140

Appendix E: Consent form for quotation attribution

Department: Waterways Centre for Freshwater Management
Telephone: +64 3 369 5600
Email: khiem.nguyen@pg.canterbury.ac.nz

Constraining factors water resource management and planning in the Plain of Reeds, Vietnam

Consent Form for quotation attribution

If this form is not signed and returned it will be assumed that you do not give permission for quotations to be attributed in any way and any information provided in the interview will be presented anonymously. No quotations will be attributed without consent.
If you are willing for quotes from your approved interview transcript to be included with an identifier in publications that arise from this research, including the publicly available thesis, please complete this form. Quotations can be attributed with varying degrees of detail e.g. identifying you personally and/or your organization, or as part of a broad stakeholder group only.

- ☐ I understand that I will be provided with a transcript of my interview for my approval.
- ☐ I give permission for quotations from the approved transcript to be included in any publication that arises from the research using the following identifiers:

Only complete the level of detail that you feel is appropriate, e.g. organization only, or work area only. Only include your name if you are comfortable with your name being included against a specific quote.
Occupation:
Organization:
(Please note the organization will also be contacted and required to provide permission to be associated with a quotation. Contact will be made with senior management and you will not be identified by name, job title, or work area, unless you have indicated below that these details can be used)
Include the following disclaimer:

- ☐ The views expressed are my own and are not necessarily those of my employer.

If you decide at a later stage (e.g. on receipt of the transcript for approval) that you would like to reconsider the attribution wording or would like to be anonymous please contact me as soon as possible and ideally before December 2018.

Signed:_____
Name:_____Date:_____
Email address:_____
Phone number:_____

Please return the consent form to Khiem Nguyen by email at khiem.nguyen@pg.canterbury.ac.nz; or post to Khiem Nguyen, c/o Waterways Centre for Freshwater Management, Private Bag 4800, Christchurch 8140

Appendix F: Letter of Introduction

Dr Edward Challies
Waterways Centre for Freshwater Management
University of Canterbury/Lincoln University
Private Bag 4800
Christchurch 8140, NEW ZEALAND
Ph: +64 3 3642330
edward.challies@canterbury.ac.nz

13 April 2018

Letter of Introduction: Khiem Nguyen

To the Mekong Delta Development Research Institute (MDI),

Mr Khiem Nguyen is a Masters research student at the University of Canterbury, New Zealand. He is enrolled in the Master of Water Resource Management at the Waterways Centre for Freshwater Management. This two-year programme of study aims to prepare graduates for a professional career in water resource management. Students are required to conduct original research and write a Masters research thesis in the second year of their studies.

Mr Nguyen will be conducting field research in Vietnam in 2018 for his thesis, which has the working title: 'Factors Enabling and Constraining Sustainable Water Management in the Plain of Reeds (Dong Thap Muoi), Vietnam'. The research aims to understand the different actors and institutional structures in place to manage water resources within the region, and to identify factors that might enable or constrain sustainable water resource management planning at a regional scale. To carry out this research, Mr Nguyen will need to interview key people involved in water resource management in the region. These may include government officials and staff at different levels, experts (such as academics or scientists) involved with water resource management, and water users such as farmers. This will help Mr Nguyen to understand different perspectives on the challenges and opportunities for regionally integrated water management and planning.

The research is being supervised by me, Dr Edward Challies, Senior Lecturer in Water Policy and Management at the Waterways Centre for Freshwater Management, University of

Canterbury, New Zealand. If you have any questions or concerns about the research proposed by Mr Nguyen, please do not hesitate to contact me at: edward.challies@canterbury.ac.nz, or +64 3 3642330. I will be happy to discuss the project with you.

Mr Nguyen would benefit greatly from any support you and your organization can provide to help him gain access to the contacts and information he needs for his research. His aim is to understand the current situation with water management in the Dong Thap Muoi sub-region region, and to contribute to sustainable management of water resources in the future.

Thank you kindly for your assistance,

Dr Edward Challies

Senior Lecturer, Water Policy and Management